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SELF-OBJECTIFICATION IN GROUP EXERCISE PARTICIPANTS:
THE ROLE OF REASONS FOR EXERCISE AND MODALITY

BY
COURTNEY MACKEY

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN
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UNIVERSITY OF RHODE ISLAND

2013

MASTER OF SCIENCE THESIS
OF
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ABSTRACT

Problem Statement: Exercise is a health behavior promoted for its vast array of physical and mental health benefits. However, there is some evidence that not all individuals necessarily have positive mental health outcomes with exercise as evidenced by measures such as body image. Influential variables, such as exercise modality and reasons for exercise need to be explored in at-risk, young females to promote optimal effects of exercise on both body and mind.

Background: Objectification theory provides a framework for understanding the bodily experience of and psychological outcomes from exercise in women. While traditional fitness classes, including aerobics, have been associated with poor body image outcomes, yoga has been suggested as an alternative class choice that may ameliorate those negative consequences. No studies have incorporated reasons for exercise and different group exercise modalities to measure changes in self-objectification and associated outcomes over time in the target population.

Methods: Self-reported data was gathered from 86 college females participating in group exercise classes at the university recreation center to assess self-objectification, reasons for exercise, body awareness, body responsiveness, and body esteem. Six weeks later, 35 participants returned a second set of surveys for longitudinal analyses. Bivariate correlations were performed to establish correlations between variables at baseline. Multivariate Analysis of Variance (MANOVA) was performed to examine differences related to exercise class modality (e.g. cardio/strength vs. yoga) and appearance-related reasons for exercise (higher vs. lower). Paired sample t-tests were

used to examine differences in these groups from baseline to the end of classes at six weeks.

Results: At baseline, self-objectification was positively correlated with appearance-related reasons for exercise ($r = .60, p < .01$), and negatively correlated with body responsiveness ($r = -.33, p < .05$) and appearance-related body esteem ($-.36, p < .05$) in all participants. The yoga group reported significantly higher mood/enjoyment reasons for exercise ($F = 5.45, p < .05$). Participants exercising for higher levels of appearance-related reasons reported significantly greater self-objectification scores ($F = 18.28, p < .001$) and lower levels of appearance-related ($F = 5.05, p < .05$) and weight-related ($F = 7.31, p < .01$) body esteem than those below the median. Over time, significant increases were seen in appearance-related body esteem ($p < .05$) for the high appearance-related reasons for exercise group participating in yoga classes ($N = 6$) and in weight-related body esteem ($p < .05$) for the low appearance-related reasons for exercise group participating in cardio/strength classes ($N = 13$).

Participants in the higher appearance-related reasons for exercise group, reported a decrease from 5.13 to -.50 in self-objectification ($t = 2.21, p < .05$) regardless of exercise modality group.

Significance and Conclusion: Despite a small group size ($N = 6$), participants with higher appearance-related reasons for exercise experienced a significant increase in appearance-related body esteem, which has been linked to positive global self-esteem. The present study supports existing literature's findings on the significance of reasons for exercise and shows some differences in body image outcomes in yoga students compared to students taking cardiovascular and strength-based classes. This

naturalistic, observational pilot study had several methodological limitations but is the first of its kind to measure these variables over time. Future research adopting an experimental design is needed to more clearly illustrate directionality and causal relationships of variables.

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PREFACE

This thesis was written to comply with the University of Rhode Island Graduate School Manuscript Thesis Format. The thesis contains one manuscript paper entitled *Self-objectification in Group Exercise Participants: The Role of Reasons for Exercise and Modality*. The manuscript has been written in a form suitable for publication in the journal *Sex Roles*.

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MANUSCRIPT – I

Prepared for submission to Sex Roles

**Self-objectification in Group Exercise Participants: The Role of Reasons for
Exercise and Modality**

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MANUSCRIPT

ABSTRACT

This study was designed to examine the effects of reasons for exercise and exercise modality on self-objectification, body awareness, body responsiveness, and body esteem. College females participating in group exercise classes at the campus recreation center were surveyed to determine these measures at baseline (N = 86). After six weeks of taking either yoga classes or cardio/strength classes, subjects were given a follow-up survey (N = 35) to assess changes and determine differences in participants based on fitness class type and level of appearance-related reasons for exercise. At baseline, the yoga group reported greater levels of mood/enjoyment reasons for exercise. Subjects within the entire sample exercising for higher levels of appearance-related reasons experienced a significant decrease in self-objectification over time, and yoga participants exercising for higher levels of appearance-related reasons reported significantly increased levels of appearance-related body esteem at six weeks. The findings of this observational pilot study support the need for incorporating reasons for exercise and yoga into future experimental studies in this target population.

Keywords: Self-objectification, Reasons for exercise, Yoga, Women, Awareness, Responsiveness, Esteem

INTRODUCTION

What moves you? As exercise makes its way to the forefront of health promotion research, it is essential to understand the complex relationship of humans with movement. Factors such as gender, age, environment, motives, and mode may construct completely different motives, experiences and outcomes of exercise for individuals.

A vast majority of exercise literature praises its physical and psychological benefits. Studies supporting improved physical health from physical activity have withstood the tests of time with findings including improved cardiovascular fitness, increased longevity, decreased blood pressure, and reduced risk of cardiovascular disease (Brown, Mishra, Lee, & Bauman, 2000; US Department of Health and Human Services, 1996). Exercise research has reached beyond the physical body to explore both its clinical and non-clinical psychological effects, including reduced anxiety, stress and depression, and increased self-esteem (Salmon, 2001; Scully, Kremer, Meade, Graham, & Dudgeon, 1998; Maltby & Day, 2001).

Research in body image, a subjective evaluation of one's body, has been shown to be both positively and negatively impacted by exercise (Wolf & Akamatsu, 1994; Prichard & Tiggemann, 2012). Body image and exercise weave a tangled web of dependent constructs, including self-esteem, exercise motives, exercise behavior, and eating disorder symptomatology which make for a less predictable relationship (Vinkers, et al., 2012). Social and psychological context has been incorporated into the physical activity literature to better understand how and why exercise, a behavior

that benefits the masses, may actually be detrimental to mental health outcomes within specific groups.

Objectification Theory

Objectification Theory (Fredrickson & Roberts, 1997) provides a theoretical framework that can be used to understand the relationship of body image concerns with exercise motivations. This theory is grounded by the sexual objectification of women or the experience of being treated as a body for the use of others (Fredrickson & Roberts, 1997). Sexual Objectification manifests as self-objectification in the degree that a person places greater emphasis on appearance attributes rather than competence-based attributes and in how frequently she monitors her appearance (McKinley & Hyde, 1996; Noll & Fredrickson, 1998).

The original model developed by Fredrickson and Roberts (1997) delineates the pathway from cultural sexual objectification to the internalized manifestation of self-objectification toward further psychological consequences. These outcomes include increased anxiety about physical appearance, reduced opportunities for peak motivational states or flow, diminished awareness of internal bodily sensations, and increased body shame. Fredrickson and Roberts (1997) propose that such psychological consequences can lead to the mental health risks of disordered eating, depression, sexual dysfunction, and body monitoring behaviors. Although present in all genders and ages, the prevalence of self-objectification and its related risks are highest in young women (McKinley, 2006).

Some environments may be more sexually objectifying than others, resulting in heightened state self-objectification (Szymanski, Moffitt, & Carr, 2011).

Szymanski et al.'s (2011) core criteria for a sexually objectifying environment include places and situations with presence of traditional gender roles, high probability of male contact, positions of women in less power than men, focus drawn to physical or sexual attributes of the body, and existing approval and acknowledgement of the male gaze. Additional factors include presence of alcohol, encouragement of sexualization through flirtation and related behaviors, and promotion of competition between women. Such an environment is clearly illustrated at colleges through events like fraternity parties and mixers in addition to day-to-day situations in dormitories, classrooms, dining halls, and more. A female's clothing choice may further exacerbate potential for objectification in any environment. According to Fredrickson and Roberts (1997), women sometimes choose to wear looser-fitting clothing to opt out of and tighter, more revealing clothing to enter the "objectification limelight."

Exercise and Self-objectification

One environment in a college campus that combines fitted, revealing clothing with all of the other variables of a *sexually objectifying environment* as outlined above (Szymanski et al., 2011), is the campus fitness center. Fitness centers are social environments where the body is on display with the potential for various objectifying encounters with the opposite sex and great emphasis on physical appearance. In a college setting, female exercise participants are already at a greater risk for body image concerns due to their age (Moradi & Huang, 2008; McKinley, 1996). Thus, Fredrickson and Roberts' (1997) objectification framework has been extended to exercise behavior research in order to better understand bodily experience and psychological determinants in women.

Some research has looked specifically at the effects of exercise environment on self-objectification. Strelan et al. (2003) reported that people who exercise in a fitness center setting report higher levels of self-objectification than those who exercise outdoors. Prichard and Tiggemann (2005) also explored the effects of exercise environment on self-objectification in a study including 60 female aerobics instructors and 97 female aerobics class participants. Exercising in the fitness center as opposed to outdoors was found to moderate the relationship between frequency of exercise and self-objectification in aerobic participants (Prichard & Tiggemann, 2005). However, there are many other variables, in addition to environment, that can affect the relationship between exercise, self-objectification, and related psychological outcomes.

Exercise motives and mode have been shown to impact the previously mentioned variables. Prichard and Tiggemann (2008) found significant relationships between exercise mode and reasons for exercise with evaluated body image measures. Health/fitness reasons were positively associated with weights-based exercise and yoga, and mood/enjoyment reasons were associated with cardiovascular classes. Appearance-related reasons for exercise were positively associated with cardiovascular-based classes and individual workouts but negatively associated with yoga. While time spent doing cardiovascular-based exercise was positively associated with self-objectification, time spent participating in yoga-based fitness classes was negatively associated with self-objectification. Prichard and Tiggemann (2008) found greater presence of negative body image-related outcomes in individuals exercising on cardio machines in comparison to all other exercise modalities. Other noteworthy

findings were that age was negatively associated with appearance-related reasons for exercise and positively associated with health reasons, and body mass index (BMI) was positively associated with appearance-related reasons.

Prichard and Tiggemann (2008) ran mediational analyses to establish the role of reasons for exercise as a mediator for exercise mode and body image outcomes. Appearance-related reasons were found to mediate the relationship between cardio-based exercise and body esteem and disordered eating. This study showed the importance of exercise motivation and mode in shaping exercise participants' attitudes toward their bodies and disordered eating behavior. Specifically, Prichard and Tiggemann (2008) introduced yoga as a potential vehicle for improving body image in exercise participants. However, the cross-sectional nature of this study prohibited any directional conclusions. Prichard and Tiggemann (2008) were unable to determine whether participants with health/fitness exercise motives and lower self-objectification were drawn to trying yoga or cultivated these characteristics through participation in yoga-based classes.

Yoga and Self-objectification

As yoga becomes increasingly popular in the West for its various health benefits, there is an increasing need for empirical research to understand why and how such outcomes are produced. The ancient Indian mind-body practice encourages participants to become aware of their bodies and move in response to internal rather than external cues (Impett, Daubenmier, & Hirschman, 2006). Not only has yoga been shown to have an impact on risk factors for chronic disease through favorable changes in body weight, blood pressure, cholesterol, and blood glucose levels, but it

has also been used in the treatment and prevention of eating disorders (Yang, 2007; Douglass, 2011). Research suggests that yoga can serve as a buffer for self-objectification and its risks through associated measures like body awareness and responsiveness but this research to date has been severely limited (Impett, Daubenmier, & Hirschman, 2006). Key limitations include lack of longitudinal studies and inconsistent methodological designs. Within the yoga literature specifically, there is not only inconsistency in outcome measures but also in the operational definition of yoga itself due to a vast array of styles.

Daubenmier (2005) examined the relationships between yoga, self-objectification, body satisfaction, and body awareness and responsiveness in a sample of self-selected yoga participants ($n = 43$), aerobics participants ($n = 45$), and control subjects participating in neither yoga nor aerobics ($n = 51$). In comparison to both the aerobics and comparison group, yoga participants exhibited significantly higher body awareness, body responsiveness, and body satisfaction, as well as lower self-objectification. No significant differences were found between the aerobic and comparison group. Body responsiveness, rather than body awareness, was found to mediate the relationship between self-objectification and disordered eating attitudes. This suggests that the distinction between awareness and responsiveness may be important. An individual may be aware of bodily sensations, but she may not take the necessary action to respond to such cues in a way that would serve her well-being. Yoga's positive correlation with body responsiveness suggests that it may have potential for use in the prevention of eating disorders. Thus, Daubenmier (2005) calls

for the inclusion of body responsiveness in literature examining the relationship between yoga, self-objectification, and other body image disturbances.

The study suggested that the relationship between exercise mode and self-objectification had to do with the level of direct experience of the body promoted by the activity. When exercising, some individuals may be disconnected from bodily processes and sensations if the mind is focused elsewhere. Over time, chronic self-objectification is theorized to diminish internal awareness due to lack of attentional resources (Fredrickson & Roberts, 1997). Mind-body exercises, such as yoga, focus on cultivating non-judgmental awareness of the felt-experience of the body. In yoga, this feedback from the body is valued and listened to in order to move within a zone of ease while still providing a physical challenge (Shiffmann, 1996). This shows that different forms of exercise may produce different bodily experiences, which may help or hinder an individual's mental health. Daubenmier (2005) claims yoga may increase body awareness and responsiveness, which in turn affects self-objectification and its outcomes. However, similar to other literature including exercise and self-objectification, the study is limited due to its cross-sectional nature and possible selection bias. Based on the possible negative effects of self-objectification, reasons for exercise, and exercise modality on mental health of exercise participants, further research is needed to understand the relationships between these variables over time.

Thus, the purpose of the present study is to explore the effect over time of self-selected exercise mode and motives on the variables of self-objectification, body awareness, body responsiveness, and body esteem in college-aged females. Based on the findings of Prichard & Tiggemann (2008), it is hypothesized that at baseline, yoga

participants will report exercising for lower levels of appearance-based reasons than other exercise class participants. Over time, it is hypothesized that yoga participants exercising for lower levels of appearance-based reasons will report a decrease in self-objectification and increases in body awareness, body responsiveness, and body esteem based on the findings of Daubenmier (2005).

METHODS

Participants and Procedure

A convenience sample of 86 students was recruited via e-mail and in-person from the university group exercise classes, which students can enroll in at the campus recreation center. Inclusion criteria included female college students, aged 18-25 years old, participating in at least one class per week during the six-week period of the study. Approval from the Institution Review Board was attained, and all participants were required to sign the informed consent for inclusion in the study. Subjects were asked to complete the baseline survey at the beginning of the group exercise program. A similar survey was completed six weeks later. The study recruited participants in three waves during the fall semester and first half of the spring semester. Participants who completed the baseline survey were e-mailed about the follow-up survey and incentives, including free group exercise packages and personal training sessions raffled off to those who completed the follow-up survey.

At baseline, 89 surveys were returned. Among the 89 surveys, 3 did not meet inclusion criteria. This resulted in a total of 86 participants with a mean age of 19.58 ($SD = 1.45$). These subjects were divided into two groups based on the types of classes they chose to participate in: cardio/strength classes ($N = 55$) and yoga ($N = 27$). Subjects participating in both cardio/strength and yoga ($N = 4$) classes were added to the cardio/strength group ($N = 59$).

After six weeks, participants were given the follow up survey. A total of 38 surveys were returned. A sample size of 35 remained after excluding 2 subjects that did not attend at least one class per week and 1 incomplete survey. The

cardio/strength group had 23 participants, and the yoga group had 12 participants.

Although the drop-out rate from baseline to six weeks was 59%, measures of baseline study variables in participants that returned the follow-up survey at six weeks were not different ($p > .05$) than participants that were lost to follow-up.

Measures

A similar questionnaire was constructed for baseline and post-assessment. Primary differences were as follows: the baseline survey included background information and reasons for exercise, while the post survey included a six-week exercise recall. The questionnaires began with background information and reasons for exercise or exercise recall, and surveys proceeded in the following order: self-objectification, body awareness, body responsiveness, and body esteem. Both questionnaires took approximately fifteen minutes to complete.

Background Information

This section assessed demographic information including age, sex, and race. Participants reported their height and weight to later calculate body mass index (BMI) by dividing their weight (kg) by height squared (m^2). A brief exercise history segment was also included in this section to determine the extent of past participation in exercise and group classes along with self-rated exercise proficiency level.

Self-Objectification

Noll and Fredrickson's (1998) Self-Objectification Questionnaire (SOQ) was used to measure the degree to which participants view their bodies for their appearance-based aspects versus competence-based aspects. The questionnaire has participants rank ten body attributes in order of importance. Five of these are

appearance-related (weight, sex appeal, physical attractiveness, firm/sculpted muscles, and measurements), and the other five are competence-related (physical coordination, health, strength, energy level, and physical fitness level). Scores range from -25 to +25 with higher scores reflecting a tendency to view one's body in terms of its appearance. Fredrickson et al. (1998) reported an internal consistency (alpha) of .87 - .91.

Reasons for Exercise

A 23-item version of the Reasons for Exercise Inventory (REI; Silberstein et al., 1988) was used to assess participants' exercise motives (Cash, Novy, Grant, 1994). The Likert Scale asks participants to rate the level of importance from 1 (*not at all important*) to 7 (*extremely important*) of seven motivational domains: exercising for health, fitness, enjoyment, mood improvement, weight control, body tone, and physical attractiveness.

Following Strelan et al. (2003), these seven domains were collapsed into three conceptually distinct domains based on correlations: appearance (weight control, body tone, and attractiveness), health/fitness (health and fitness), and mood/enjoyment (mood improvement and enjoyment). The internal reliabilities (alpha) of the three domains are .85, .85, and .76 (Prichard & Tiggemann, 2008). The Reasons for Exercise Inventory was not included in the post survey, because it was predicted that measures would not significantly change in six weeks.

Body Awareness

The 18-item Body Awareness Questionnaire (BAQ; Shields et al., 1989) was used to measure attentiveness to internal bodily processes. A 7-point Likert Scale is

used for participants to rate whether statements such as, "I am aware of a cycle in my activity level throughout the day," and "I notice body reactions when I am fatigued," are *not at all true about me* (1) or *very true about me* (7). A higher score reflects greater body awareness. Shields et al. reported this scale as correlated with the PBCQ in women ($r = .48$, $p < .01$; Miller et al. 1981). Daubenmier (2005) reported a good test-retest reliability of the BAQ ($r = .80$), and internal reliability (alpha) of .89.

Body Responsiveness

A 7-item likert scale created by Daubenmier (2005) was used to measure responsiveness to bodily sensations. Sample statements are "I am confident that my body will let me know what is good for me," "My mind and my body often want to do different things (reverse coded)," and "I enjoy becoming aware of how my body feels." Participants rate statements from 1 (*not at all true about me*) to 7 (*very true about me*), with higher scores reflecting greater body responsiveness. Since its development, it has been used in other literature including yoga and self-objectification (Impett et al., 2006). The internal reliability (alpha) of this scale for body responsiveness is .83 (Daubenmier, 2005).

Body Esteem

The Body Esteem Scale for Adolescents and Adults (BESAA; Mendelson et al., 2001) was used to measure participants' overall evaluation of their bodies. The BESAA is a 23-item 5-point Likert Scale ranging from 0 (never) to 4 (always) for statements such as "I'm proud of my body" and reverse-coded items like "I wish I looked like someone else." Scores range from 23 to 155 with higher scores reflecting higher body esteem. Internal reliability is .93 (Prichard & Tiggemann, 2008).

Mendelson et al. (2001) divided the 23 items into three subscales:

Appearance, Attribution, and Weight. The BE-appearance subscale, which assesses one's general feelings about appearance is 10 items and was found to have a high internal consistency (alpha) of .92. The BE-attribution subscale, which measures one's evaluations attributed to others about one's body and appearance, consists of 5 items and has a good internal consistency (alpha) of .84. The BE-Weight subscale, which evaluates one's weight satisfaction, contains 8 items and has a very high internal consistency (alpha) of .94.

Physical Activity Recall

A questionnaire was included for participants to recall exercise participation during the six weeks of the study. Questions assessed exercise frequency, type of classes, location and mode of exercise outside of classes (strength and cardio in fitness center, outdoors), and self-rated proficiency in exercise classes. This tool was used to retrospectively track class attendance.

RESULTS

Characteristics of the Sample

Table 1 presents means for demographic information and exercise history in the entire sample and within the two exercise modality groups. T-tests and Chi Square analyses were used to examine difference between modalities. The sample of females is mostly white (95.3%) with a mean body mass index within a healthy range ($M = 22.92$, $SD = 2.79$) and comparable to other samples of young, physically active women ($M = 22.98$, $SD = 3.97$; Greenleaf, 2005). On average, participants have been regularly exercising for 7.6 years ($SD = 5.5$). Participants use the fitness facility 3.34 times per week ($SD = 1.59$). Self-rated exercise competence levels vary among the 5 categories with most participants ranking themselves as intermediate (44.2%) or intermediate-advanced (29.1%).

A few differences between the Cardio/strength and Yoga groups were significant at baseline. Yoga participants were slightly younger, $t(84) = 2.07$, $p < .05$ and had a longer history of practicing yoga $t(84) = -2.64$, $p < .01$. Participants in the Cardio/strength group use the fitness facility more frequently than Yoga participants, $t(84) = 3.95$, $p < .01$.

Correlations between Variables

Bivariate correlations were performed to explore the relationships between variables at baseline. Table 2 shows correlation coefficients for self-objectification and outcomes. Self-objectification was positively correlated with appearance-related reasons for exercise, $r = .60$, $p < .01$. Significantly negative correlations were found for self-objectification with body responsiveness ($r = -.33$, $p < .05$) and appearance-

related body esteem ($r = -.36, p < .05$).

Group Differences on Variables

A multivariate ANOVA was conducted to examine between-group differences in baseline measures based upon exercise modality using a Bonferroni correction to compare for multiple comparisons (Table 3). The only significant finding was that the yoga group reported exercising for more mood/enjoyment reasons than the Cardio/strength group ($F(1, 85) = 5.45, p < .05$).

Another MANOVA was conducted to examine differences based upon degree of appearance-related reasons for exercise using a Bonferroni correction to adjust for multiple comparisons (Table 4). A median split (5.3) was used to create higher ($N=43$) and lower ($N = 42$) appearance oriented groups. Participants exercising for more appearance-related reasons had significantly greater self-objectification scores ($F(1,85) = 18.28, p = .00$). Participants exercising for more appearance-related reasons exhibit lower levels of appearance-related ($F(1,85) = 5.05, p < .05$) and weight-related ($F(1,85) = 7.31, p < .01$) body esteem.

Changes in Measures over Time

In order to test the hypothesis that yoga participants with lower levels of appearance-based reasons will report a decrease in self-objectification and increases in body awareness, body responsiveness, and body esteem, subjects were split into four groups by levels of appearance-related reasons (higher and lower) and exercise modality (cardio/strength and yoga). Paired sample t-tests were used to conduct an exploratory analysis examining differences from baseline to the end of the classes in these groups. Although there were reductions in self-objectification in all four groups,

the reductions were not significant given the limited sample sizes in the groups. These trends and group sample sizes are reflected in Figure 2. Significant increases were seen in appearance-related body esteem for the high appearance-related reasons for exercise group participating in yoga classes ($p < .05$) and in weight-related body esteem for the low appearance-related reasons for exercise group participating in cardio/strength classes. When running the test only splitting the sample for levels of appearance-related reasons for exercise, the decrease from 5.13 to -.50 in self-objectification over six weeks was significant $t(15) = 2.21, p < .05$.

DISCUSSION

The present study used objectification theory framework (Fredrickson & Roberts, 1997) to explore the relationships between reasons for exercise, body awareness and responsiveness, group exercise class modality, and body image-related outcomes. Our baseline findings support findings from already existing research in this area. Women reporting higher levels of self-objectification were more likely to exhibit negative perceptions of body image as seen in the measure's negative correlation with appearance-related ($r = -.36$) and weight-related ($r = -.36$) body esteem ($p < .05$). This has been shown in general samples of females of similar ages (Fredrickson et al., 1998; Breines et al., 2008) and female exercisers of similar ages (Prichard & Tiggemann, 2005). Similar to the findings of Strelan et al. (2003), women higher in self-objectification were more likely to exercise for appearance-related reasons ($r = -.60$, $p < .01$). Previous research has associated such outcomes with harmful psychological implications, including depression and disordered eating symptomatology (Moradi & Huang, 2008), and diminished overall well-being (Sinclair & Myers, 2004).

Given previous findings that reasons for exercise have been associated with various negative psychological outcomes (e.g. Vinkers et al., 2012; Strelan et al., 2003), we examined the differences in reasons for exercise between the two exercise modality groups. The only significant difference was that the yoga group exercised more for mood/enjoyment, which has been shown to be negatively correlated with self-objectification (Prichard & Tiggemann, 2012). Contrary to our hypothesis, yoga participants did not report significantly lower levels of appearance-related reasons for

exercise. This may be because the group's mean value for appearance-related reasons for exercise was slightly higher in our sample ($M = 5.06$, $SD = 1.44$) than similar samples of young exercising women (e.g. $M = 4.54$, $SD = 1.13$; Prichard & Tiggemann, 2008). This may be influenced by the nearly homogenous sample of White/Non-Hispanic females in this study and research supporting greater levels of weight and shape concerns in such samples (Fitzsimmons & Bardone-Cone, 2011).

The significant decrease in self-objectification ($p < .05$) seen in the higher appearance-related reasons for exercise group shows that participants exercising for appearance-related reasons can begin to place less emphasis on their appearance compared to competence characteristics. While it was hypothesized that subjects exercising for low appearance-related reasons rather than high would be the group to experience greater reductions in self-objectification, such a finding is still meaningful. Future research should perhaps focus on groups exercising for higher appearance-related reasons, regardless of chosen exercise modality, given their greater risk for negative psychological consequences and potential for positive psychological effects over time (Prichard & Tiggemann, 2008).

In order to test our second hypothesis concerning outcome changes of the yoga participants exercising for lower levels of appearance-related reasons, we added the variable of exercise modality for a 2x2 split (lower and higher appearance-related reasons for exercise x cardio/strength and yoga). The cardio/strength group exercising for lower appearance-related reasons showed a significant increase in weight-related body esteem. Although not initially driven by motives of changing their appearance, they may have either changed their weight or actually experienced weight loss and/or

changes in body tone during the six-week period. This may be due to the greater energy expenditure of higher intensity cardio/strength classes compared to yoga classes. The yoga group exercising for higher appearance-related reasons showed significant increases in appearance-related body esteem. Such an outcome has broader mental health implications as appearance-related body esteem is also related to global self-esteem (Mendelson et al., 2001).

Over time, the yoga group participating for lower appearance-related reasons showed a trend in changes of self-objectification and body awareness toward the expected direction. However, due to the small sample size of this group ($N = 6$) and the lack therefore of statistical significance, we cannot say this supports our second hypothesis. It must be noted that one of the only studies looking at self-objectification measures over time in yoga participants was performed during a 2-month yoga intensive of 17 females and was constrained by many limitations (Impett et al., 2006). Thus, any research findings examining longitudinal changes contribute to the small body of literature in this area.

The use of Daubenmier's Body Responsiveness Scale (2005) in self-objectification and exercise literature is further supported by the present study. A significant negative correlation was found between self-objectification and body responsiveness rather than body awareness. Daubenmier (2005) found body responsiveness to have a significant negative correlation with disordered eating ($r = -.47, p < .01$). She did not find a significant correlation between body awareness and disordered eating. This suggests that research in the areas of awareness or

mindfulness, yoga, and disordered eating should separate responsiveness from awareness of an individual's bodily cues.

While the present study suggested slightly higher levels of body responsiveness in the yoga group than cardio/strength group, the small sample size precluded statistical significance. Daubenmier (2005) used a larger sample size ($N = 139$) and did find a significantly greater mean for body responsiveness in yoga participants compared to aerobic participants and a control group of non-yoga and non-aerobic subjects ($p < .01$). She suggests that yoga not only creates an awareness of one's bodily cues but also encourages participants to respond to these cues while mindfully moving through postures. Emphasis is placed on using internal cues to guide an individual's yoga class rather than mirroring instructors and peers. However, due to yoga's many styles, much research is needed to determine the best way to quantify this process and compare it to other forms of exercise.

Although it was not included in our hypotheses and analyzed as a dependent variable, an interesting finding in the present study is the difference between the two exercise modality groups in self-reported facility usage frequency. On average, yoga participants use the fitness facility 2.5 times per week ($SD = 1.19$) and cardio/strength participants use the facility 3.73 ($SD = 1.61$) times per week in addition to taking group classes ($p < .01$). As shown in previous studies, exercising in a fitness facility is associated with higher levels of self-objectification than when exercising outside. This follows suit the Szymanski et al. (2011) criteria for a sexually objectifying environment. While such criteria may be inherent in a fitness center, further research involving exercise environment and related outcomes is needed to determine practical

implications for creating a more positive exercise experience for everyone. Future research should ask more detailed questions of fitness facility usage and incorporate the variable into analyses for self-objectification and related outcomes.

The present study is considered a pilot study due to its incorporation of various elements from research in the field of self-objectification, reasons for exercise, and yoga over time. This is the first study looking at the relationship of these variables longitudinally in college females participating in yoga and other exercise modalities in a group fitness setting. Because of its unique design and the small sample size of yoga participants practicing for lower appearance-related reasons ($N = 6$), our hypotheses may have been too specific for statistical support.

Thus, we must acknowledge limitations of the present study to help guide future research. In addition to the undersized yoga group, the overall sample size was too small to produce the power to see changes over time. The time period of six weeks between baseline and follow-up may have been too short. On average, cardio/strength participants had already been participating in group exercise classes (non-yoga) for 1.3 years and yoga participants had already been practicing yoga for .9 years. Not only does this suggest that six weeks might not have been long enough to yield significant changes in the measured outcomes, but it also shows the weakness of the naturalistic, observational design of the present study. Future research may benefit from examining the effects within individuals new to the exercise modalities.

Another major limitation of such a study design was our inability to separate cardiovascular and strength classes into two separate groups. Prichard & Tiggemann (2008) found that participants in cardio-based classes exhibited lower levels of body

esteem and higher levels of appearance-related reasons for exercise and disordered eating symptomatology than participants in weights-based classes. While some participants in our cardio/strength group participated in all or mostly one type or another of class, we had no way of establishing enough consistency in this area to split the group into two. Also, the addition of a control group of non-exercising college females may have been a useful comparison group for the present study. In accordance with the findings of Prichard and Tiggemann (2008), a comparison group of individuals using cardio-machines for individual workouts should be added in further research due to their increased risk for negative body-image-related outcomes.

While there were not many differences between the two exercise modality groups at baseline, a randomized, controlled study should be performed in the future to minimize effects of exercise history and potential descriptive differences between groups at baseline. An experimental design would help the present study's limitation of participants choosing different amounts and types of classes per week. The inclusion criterion of participating in at least one class per week was an effort to minimize outliers. However, some participants took over 4-5 classes per week while others participated in the minimum amount. Another limitation was the homogenous sample of young women, reducing external validity limiting the generalizability to other populations.

It must also be noted that this study used the three subscales of body esteem from Mendelson et al. (2003) in analyses rather than combining them for a total body esteem score. This was done to see if there were differences in the three subscales, and the present study did show differences. Future exercise and body esteem research

using BESAA from Mendelson et al. (2003) may want to separate out the three subscales in analyses to investigate differences as some subscales may be more amenable to change than others. This is similar to the inconsistency existing in methodology for assessing many of the constructs in this area and serves as a major limitation when trying to compare findings across studies to develop consensus within the field.

Methodological gaps need to be filled within and between the research of Daubenmier (2005) and Prichard and Tiggemann (2008) to integrate yoga into self-objectification exercise literature. Such a fusion would help understand how factors such as exercise modality, environment, frequency, reasons for exercise, body awareness and responsiveness may relate to one another and impact psychological outcomes. Despite its limitations, the present study serves as a pilot study to bridge together the two areas of literature. It incorporates the findings of Daubenmier (2005) on yoga and related outcomes into the current research supporting the importance of considering reasons for exercise into the study of self-objectification (e.g. Prichard & Tiggemann, 2008). Although Fredrickson and Roberts' (1997) objectification theory did not originate in exercise literature, this study adds to the growing support that it may provide a framework for studying the relationships between exercise, body image, and mental well-being.

With growing empirical support for the health benefits of physical activity and exercise, it is important to explore the complex and potentially harmful relationships between specific variables in at-risk populations. More empirically-grounded research in diverse populations can guide exercise professionals to determine what modes of

exercise may be incorporated into individuals' programs to address their needs. Due to the pervasive nature of body image concerns, it is imperative to expand upon literature in the field of bodily experience to help promote more holistic approaches to a sound mind and body.

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Table 1. Sample Characteristics

	Total Sample (N = 86)	Cardio/Strength (N = 59)	Yoga (N = 27)
Age (years)*	19.58 (1.45)	19.80 (1.41)	19.11 (1.45)
Exercise history (months)			
General	90.81 (66.10)	83.64 (66.59)	106.48 (63.43)
Group exercise (non-Yoga)	18.24 (28.28)	15.66 (21.88)	23.78 (38.58)
Yoga **	5.23 (11.46)	2.53 (7.09)	11.13 (16.26)
Facility usage frequency**	3.34 (1.59)	3.73 (1.61)	2.50 (1.19)
Body mass index (BMI)	22.92 (2.79)	22.99 (2.80)	22.77 (2.79)
Ethnicity (%)			
Asian	1.2	1.7	0
Black/African American	1.2	1.7	0
Hispanic	2.3	3.4	0
White/Non-Hispanic	95.3	93.2	100
Exercise competence level (%)			
Beginning	5.8	6.8	3.7
Beginning-intermediate	18.6	13.6	29.6
Intermediate	44.2	45.8	40.7
Intermediate-advanced	29.1	32.2	22.2
Advanced	2.3	1.7	3.7

* indicates a significant difference between modalities with $p < .05$

** indicates a significant difference between modalities with $p < .01$

Table 2. Self-Objectification and Correlated Variables

	Self-objectification
Reasons for exercise	
Appearance	.60**
Health/fitness	-.04
Mood/enjoyment	-.13
Body awareness	-.12
Body responsiveness	-.33*
Body esteem	
Appearance	-.36*
Attribution	.06
Weight	-.36*

** $p < .01$; * $p < .05$

Table 3. Baseline Measures by Exercise Modality

	Cardio/Strength (N = 59)	Yoga (N = 27)
Reasons for exercise		
Appearance	5.19 (.90)	5.06 (1.44)
Health/fitness	5.62 (.82)	5.75 (.83)
Mood/enjoyment*	4.53 (.96)	5.04 (.84)
Self-objectification	.31 (11.06)	.30 (14.11)
Body awareness	4.54 (.85)	4.59 (.79)
Body responsiveness	4.66 (.89)	4.86 (.86)
Body esteem		
Appearance	2.29 (.76)	2.27 (.74)
Attribution	2.25 (.49)	2.39 (.50)
Weight	2.11 (.86)	2.20 (.99)

* indicates a significant difference ($p < .05$) when using Bonferonni correction for multiple comparisons

Table 4. Baseline Measures by Reasons for Exercise

	<u>Appearance-related reasons for exercise</u>	
	Lower (N = 42)	Higher (N = 43)
Reasons for exercise		
Appearance*	4.31 (.89)	5.97 (.45)
Health/fitness*	5.47 (.82)	5.85 (.79)
Mood/enjoyment	4.60 (.97)	4.78 (.93)
Self-objectification*	-4.83 (10.39)	5.33 (11.47)
Body awareness	4.54 (.88)	4.58 (.78)
Body responsiveness	4.88 (.85)	4.56 (.91)
Body esteem		
Appearance*	2.47 (.72)	2.11 (.74)
Attribution	2.25 (.51)	2.32 (.48)
Weight*	2.40 (.92)	1.89 (.80)

* indicates a significant difference ($p < .05$) when using Bonferonni correction for multiple comparisons

LIST OF FIGURES

Fig 1 Body Awareness Scores from baseline to six weeks for four groups based on appearance-related reasons for exercise (high and low) and exercise modality (cardio/strength and yoga)

Fig 2. Self-objectification scores from baseline to six weeks for four groups based on appearance-related reasons for exercise (high and low) and exercise modality (cardio/strength and yoga).

Figure 1

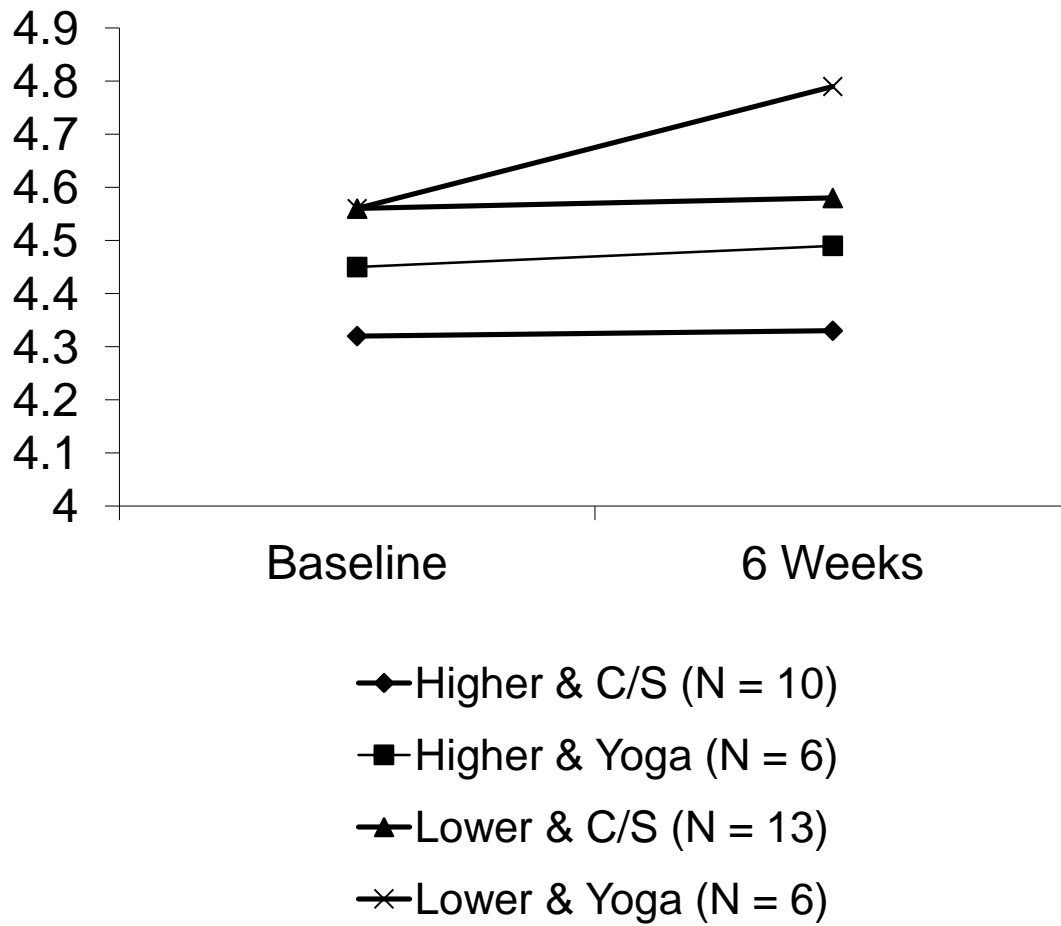
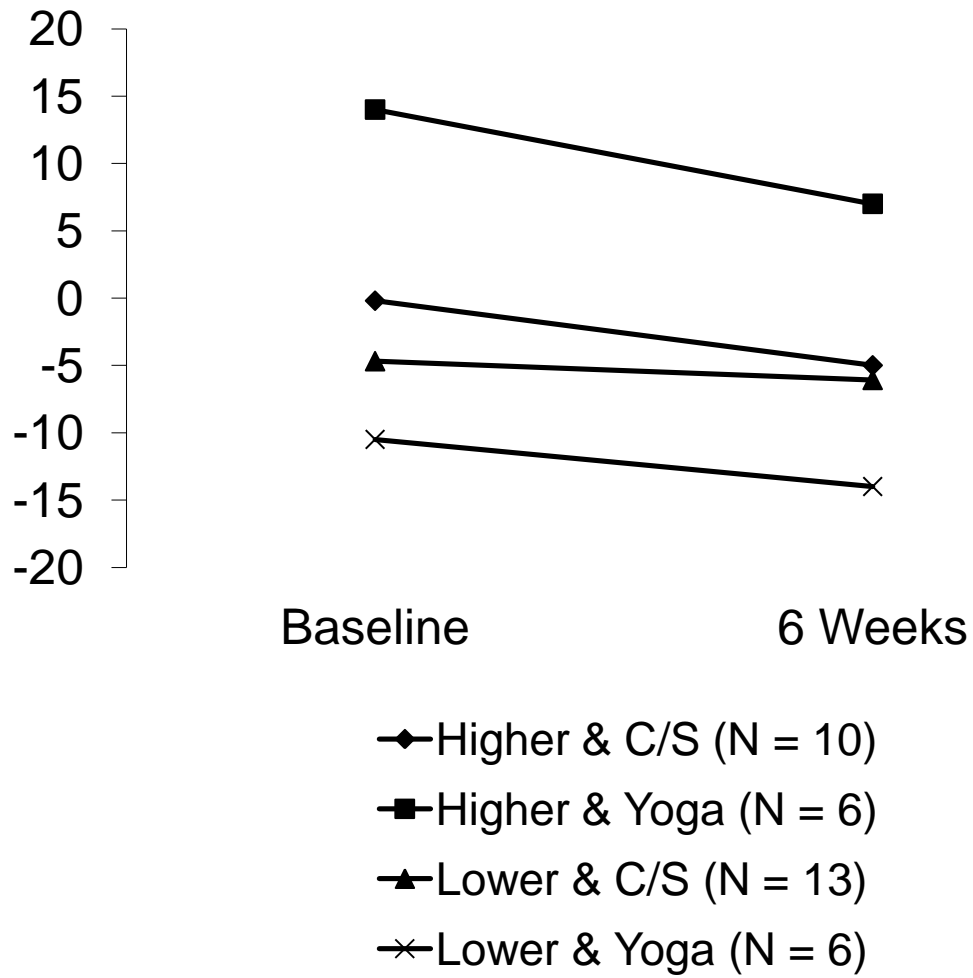


Figure 2



APPENDIX A

Literature Review

Introduction

Physical activity is promoted as a health behavior with various correlated outcomes related to physical and mental health. Physical outcomes include, but are not limited to, improved cardiovascular fitness, increased longevity, decreased blood pressure, and reduced risk of cardiovascular disease (Brown, Mishra, Lee, & Bauman, 2000; US Department of Health and Human Services, 1996). In regard to psychological well-being, regular physical activity has been shown to reduce anxiety, stress and depression, and increase self-esteem (Salmon, 2001; Scully, Kremer, Meade, Graham, & Dudgeon, 1998; Matby & Day, 2001).

Although a vast majority of literature correlates physical activity with improved health-related measures, some research shows that various physical, social, and psychological factors cause individuals to experience exercise and its effects differently (Ackard, Brehm, & Stefan, 2002; Martin Ginis, Prapavessis, & Haase, 2008). Some studies have linked physical activity with positive body image outcomes, while some have found that female exercisers display poorer body image and greater eating disturbance than female non-exercisers and male exercisers (Wolf & Akamatsu, 1994; Prichard & Tiggemann, 2012). This may be explained by the relation of self-esteem and body image measures to exercise motives, exercise behavior, and eating disorder symptomatology (Vinkers et al., 2012).

Fredrickson and Roberts' (1997) objectification theory has recently been used to explain the complex relationship of body image concerns with other variables like

exercise motivations and behavior in women (Strelan, Mehaffey, & Tiggemann, 2003; Prichard & Tiggemann, 2012). Objectification theory bridges sociology and psychology to provide an integrative framework used for the translation of women's socialization and experiences into purported mental health problems. The theory was originally derived to explore the pathway from the social construct of sexual objectification to its internalization in individuals as self-objectification and further to its proposed psychological effects (Fredrickson & Roberts, 1997).

Sexual Objectification manifests as self-objectification in the degree that a person places greater emphasis on appearance attributes rather than competence-based attributes and in how frequently she monitors her appearance (McKinley & Hyde, 1996; Noll & Fredrickson, 1998). A mediational model shows how self-objectification leads to mental health risks via negative psychological outcomes. Negative outcomes include increase in anxiety about physical appearance, reduced opportunities for peak motivational states or flow, diminished awareness of internal bodily sensations, and increased body shame. These outcomes can in turn lead to disordered eating, depression, sexual dysfunction, and body monitoring behaviors (Fredrickson & Roberts, 1997; Moradi & Huang, 2008). Although present in all genders and ages, the prevalence of self-objectification and its related risks are highest in young women (Moradi & Huang, 2008).

Internalization of Western culture's thin ideal can impact exercise motives and behavior and further affect self-objectification. A person may exercise for appearance-related, health/fitness-related, or mood/enjoyment-related reasons, and this may affect bodily experience during exercise, leading to psychological outcomes (Strelan et al., 2003). An individual's most valued reason for exercise has been shown to mediate the

relationship between exercise and self-objectification, with appearance-related reasons showing an association with higher levels of self-objectification (Prichard & Tiggemann, 2008). Exercising in the fitness center as opposed to outdoors moderates the relationship between frequency of exercise and self-objectification (Prichard & Tiggemann, 2005). In addition to environment, exercise mode may have an impact on these variables. For example, women who practice yoga are shown to have lower levels of self-objectification than women who exercise on cardio machines in the fitness center (Prichard & Tiggemann, 2008).

Yoga, an Ancient Indian mind-body practice, is becoming increasingly popular in the West for its various health benefits (Impett, Daubenmier, & Hirschman, 2006). Not only has yoga been shown to have an impact on risk factors for chronic disease through favorable changes in body weight, blood pressure, cholesterol, and blood glucose levels, but it has also been used in the treatment and prevention of eating disorders (Yang, 2007; Douglass, 2011). Research suggests that yoga can serve as a buffer for self-objectification and its associated outcomes like body awareness and responsiveness (Impett, Daubenmier, & Hirschman, 2006). However, there are many limitations to the existing literature in this area, including small sample sizes and inconsistencies between studies due to the wide variety of yoga styles (Daubenmier, 2005). A present lack of experimental and longitudinal data also creates an inability to establish causal influence among associated variables (Impett, Daubenmier, & Hirschman, 2006).

Self-Objectification

Objectification theory was proposed by Fredrickson and Roberts (1997) as a framework for understanding the psychological consequences of women's social

experiences. It explains that gender differences extend beyond the biological body. Women's routine experience of sexual objectification is a foundational component of Fredrickson and Roberts' (1997) objectification theory. Sexual objectification occurs when a woman's identity is reduced to her body, body parts, or sexual functions (Bartky, 1990). Factors such as ethnicity, class, sexuality, and age cause females to internalize and experience sexual objectification to varying degrees. However, objectification theory proposes that having a reproductively mature body creates a shared social experience, making females vulnerable for certain mental health risks.

Fredrickson and Roberts (1997) take into account previous psychosocial research and conclude that the sexualizing of women manifests on a continuum ranging from sexualized evaluation to sexual violence. While the damaging effects of sexual violence have been studied in-depth, everyday sexualized evaluation should not go unscathed in research. Such evaluation of females is ever-present through the objectifying gaze, a visual inspection of the body. This gaze exists via interpersonal encounters, visual media depictions of social encounters and interactions, and media's use of the sexually objectified female body in various outlets. While physical representations may not be central to all daily experiences, the objectifying gaze is not under women's control and the potential for objectifying contexts is ubiquitous.

Although Fredrickson and Roberts (1997) propose objectification theory as a framework to understand shared social experiences of all women and their bodies, the existing literature primarily uses samples of heterosexual, college-aged, Caucasian Women (Moradi & Huang, 2008). A review of sexual objectification in women by Szymanski, Moffitt, and Carr (2011) claims that sexual objectification intersects various

sociocultural identities of women via historical events and media portrayals. This causes women of various minority groups to experience sexual objectification beyond the Western "thin ideal" usually studied in body image literature. A common thread of sexual objectification amongst women of all sociocultural groups is the media's focus on unattainable physical beauty in the construction of a woman's sexiness and worth (Szymanski, Moffitt, & Carr, 2011; APA, 2010).

Fredrickson and Roberts (1997) explain that sociocultural presence of sexual objectification leads to self-objectification, the internalization of an observer's perspective on one's own body. While self-objectification is present in all individuals, it manifests in varying degrees dependant on one's value in appearance versus competence-based components. Focus on appearance manifests as body surveillance, which intersects with McKinley and Hyde's (1996) conceptualization of objectified body consciousness. Fredrickson and Roberts (1997) call such surveillance "appearance monitoring" and postulate its outcomes to include increased body shame, increased anxiety, decreased "flow" states, and decreased internal awareness or insensitivity to bodily cues.

Body shame results from a self-perception of failing to meet internalized cultural standards, anxiety results from anticipation of having one's body evaluated, "flow" refers to Csikszentmihalyi's (1982, 1990) term meaning "rare moments during which we feel we are truly living, uncontrolled by others, creative, and joyful," and awareness of internal bodily states includes the interpretation of physiological sensations like stomach contractions and sexual arousal (Moradi & Huang, 2008). The pervasive nature of self-objectification consumes women and causes a disconnection from the present moment and their body's needs. These effects of self-objectification and appearance monitoring

prevent peak performance and further put women at risk for depression, sexual dysfunction, and eating disorders (Fredrickson & Roberts, 1997). The preceding variables provide the integrative framework for objectification theory as illustrated in *Figure 3*. Moradi and Huang (2008) wrote a review of objectification theory research findings and provided an updated model constructed by weaving together examined pathways from the preceding decade. This revised model is seen in *Figure 4*.

Researchers use one of two distinct tools or varying combinations of the two for measuring self-objectification. Noll and Fredrickson's (1998) Self-Objectification Questionnaire (SOQ) is widely used and often depicts trait self-objectification. This questionnaire has participants rank ten body attributes in order of importance. Of these attributes, five are appearance-based and five are competence-based. The sum of appearance rankings is subtracted from the sum of competence rankings for a total score ranging from -25 to 25. Higher scores reflect a greater value placed on one's appearance, denoting greater self-objectification.

The other tool used is McKinley and Hyde's (1996) Objectified Body Consciousness Scale (OBCS). The OBCS consists of 24 items broken into three subscales: body surveillance, body shame, and appearance control beliefs. The body surveillance subscale is often used to accompany the SOQ and is sometimes used interchangeably to represent self-objectification. The body shame subscale is often used in addition to the SOQ or body surveillance subscale as an associated outcome of self-objectification and potential precursor to other psychological outcomes. While self-objectification research often uses these 2 subscales of OBCS, it often does not include the appearance control beliefs subscale (Moradi & Huang, 2008).

Existing experimental and correlational research explores self-objectification as a precursor and consequence of other variables. The pervasive nature of self-objectification is examined by looking at its relationship with subjective well-being. A study of 49 female college students by Breines, Crocker, and Garcia (2004) investigated the effect of potentially objectifying situations throughout the day on participants' well-being. Subjects carried palm pilots with them for 14 days and filled out surveys to determine their subjective well-being after activities throughout the day. Increases in self-objectification were related to decreased well-being, moderated by self-esteem. Another study on self-objectification and well-being found that self-objectification's relation to self-esteem was mediated by body shame, and body shame's relation to life satisfaction was mediated by self-esteem (Mercurio & Landry, 2008). A cross-sectional study by Sinclair and Myers (2004) including 190 undergraduate females found a negative correlation between body shame and wellness measures including Creative Self, Coping Self, and Total Wellness.

While outcome measures like wellness and life satisfaction may seem elusive, more tangible, quantifiable variables have also been explored. One of the first studies by Fredrickson et al. (1998) found that women had poorer math performance when wearing a swimsuit compared to a sweater, reflecting the effect of objectifying conditions and cognitive performance. Harrell et al. (2006) found that self-objectification mediates the relationship between smoking status and dieting and disordered eating behaviors. Muehlenkamp, Swanson, and Brausch (2005) surveyed 391 college women and found pathways from self-objectification to negative body regard, negative body regard to depression, and depression to self-harm. Sanchez and Broccoli (2008) exposed 86

undergraduate women to relationship-related or neutral words in a lexical decision making task. In this study, single women showed greater self-objectification than women in relationships.

In addition to relationship status, other characteristics like gender, age, ethnicity, and body mass index affect bodily experience and self-objectification. Fredrickson and Roberts' (1997) objectification theory is framed around women, and most research focuses on women. However, it must be noted that the theory is increasingly being applied to men, showing that they also exhibit self-objectification and associated psychological outcomes (Strelan & Hargreaves et al., 2005). In a cross-sectional study by Strelan and Hargreaves (2005) men reported a mean score of -10.22 for self-objectification and women reported a score of -4.74 ($p < .05$). While the sample size of 153 was small for a study of this nature and mean scores of self-objectification in both genders were lower than previously studied samples, it is clear that women still exhibited greater self-objectification than men. Greater prevalence of markers from objectification theory in women is a universal finding in the literature (Moradi & Huang, 2008; Fredrick et al., 2007).

Many studies have looked at causal pathways of self-objectification, body image, and eating-related consequences (Moradi & Huang, 2008). Most studies are cross-sectional, but some have experimental and longitudinal components. Forbes, Jobe, and Revak (2006) surveyed 123 college women and found a link between body shame and propensity to change weight. Moradi, Dirks, and Matteson (2005) conducted a study of 221 young women and found sexual objectification experiences were linked to body surveillance, body shame, and eating disorder symptoms (EAT-26). Consistent with other

literature, body shame mediated the link between body surveillance and disordered eating (Moradi et al., 2005).

In response to the primarily Caucasian samples and cross-sectional design used in objectification research, Fitzsimmons and Bardone-Cone (2011) examined the relationship between body surveillance and weight/shape concern in 156 Caucasian and 70 African American undergraduate females. Body surveillance was measured as an indicator of self-objectification and the Weight Concern and Shape Concern subscales of the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994) was used to assess weight/shape concern at baseline and five months later. Body surveillance and weight/shape concern were related at baseline in both groups. Data collected at 5-months showed a downward spiral-type influence of the two variables in the Caucasian women but not in the African American women. In the latter group, this study found weight/shape concern to predict body surveillance overtime, but body surveillance did not predict weight/shape concern as seen in the Caucasian group. This study shows that while all racial/ethnic groups are vulnerable to the effects of sexual objectification, they may not all be affected by the Western "thin ideal" to the same degree.

Tiggemann and Slater (2001) tested the relationship between self-objectification measures and disordered eating in 50 former female students of classical ballet and 51 undergraduate psychology female students. Both groups showed a significant relationship between self-objectification and disordered eating, measured through EAT-26, which was mediated by body shame. As hypothesized, the former dancers scored higher on self-objectification, self-surveillance, and disordered eating. This suggests that appearance-

oriented activity may cause females to experience objectification and its proposed consequences to a greater degree than other groups.

Relationships between these variables had led to the integration of objectification theory in experimental studies to assess its role in prevention of disordered eating symptoms in subclinical populations. Kroon Van Diest and Perez (2013) assessed the effects of a cognitive-dissonance-based eating disorder prevention program in an undergraduate sorority on thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms (EDEQ). The study included surveys at baseline (N = 177), post-intervention (N = 169), 5-month follow-up (N = 159), and 1-year follow-up (N = 105).

Significant decreases occurred in all measures at post-intervention ($p < .001$) and were maintained at follow-up assessments. However, the decrease in self-objectification at 1-year was no longer significant. Body Mass Index (BMI) was found to have a significant main effect on eating disorder symptoms and body dissatisfaction ($p < .01$). The pathway from self-objectification to eating disorder symptoms was not significant in the tested structural model, but post hoc regression analysis showed self-objectification as a separate predictor of eating disorder symptoms (Beta = 0.42, $t(176) = 6.11$, $p < .001$). Mean values of self-objectification significantly decreased from the intervention with values of 3.40 (SD = 0.05, $p < .001$) at baseline, -0.49 (SD = 0.06, $p < .001$) post-intervention, and maintained -0.15 (SD = 0.08, $p = .048$) at 5-month follow-up. Eating disorder symptoms continued to further decrease even at 1-year follow-up.

This study by Kroon Van Diest and Perez (2013) shows that interventions can help reduce levels of self-objectification, but the effects may dissipate after the

intervention. Similar relationships were observed in thin-ideal internalization and self-objectification with the outcomes of body dissatisfaction and eating disorder symptoms. This shows that McKinley's (1996) Objectified Body Consciousness may not be the only framework that overlaps with Fredrickson and Roberts' (1997) objectification theory.

Thin-ideal internalization is part of Stice's (1994) dual pathway model, which is another example of overlapping frameworks. The dual pathway model hypothesizes that thin-ideal internalization affects body dissatisfaction, restrained eating and negative affect, which lead to eating disorder symptoms. Stice's (1994) outcome measure of negative affect differs from objectification theory's separation of anxiety, depression, and flow. Also, objectification considers pressure to be thin, measured as thin-ideal internalization in the dual pathway model, to be one specific manifestation of sexual objectification (Moradi & Huang, 2008). Fredrickson and Roberts' (1997) objectification theory reaches beyond the thin-ideal, allowing for the exploration of factors such as sexual harassment, sexual abuse, and subtle, everyday objectifying experiences in the connection of body image and eating pathology. Thus, it is important to note that objectification theory overlaps other body image models using concepts like the thin-ideal but integrates many other factors in the socialization of women to understand bodily experience and psychological outcomes (Moradi & Huang, 2008).

A longitudinal study by McKinley (2006) supports theories that body image discrepancies decrease with age. The study looked at changes in body surveillance, body shame, and body esteem over a period of 10 years in 74 middle-aged women and 72 young women. At Wave 1 of data collection, young women exhibited significantly higher levels of body surveillance and body shame than middle-aged women ($p < .01$). At Wave

2, 10 years later, the cohort of young women exhibited significantly lower levels of body surveillance, body shame, dieting, and restricted eating. ($p < .001$). Similar correlational relationships between variables were found in both groups of women during both waves of data collection: a positive relationship between surveillance and body shame, a negative relationship between body shame and body esteem, and a positive relationship between appearance control beliefs and body esteem. However, the relationship between body shame and body surveillance was stronger in young women than middle-aged women ($z = 2.77, p < .05$).

McKinley (2006) also found relationships between these variables and psychological well-being. Body esteem had a strong positive relationship with all six psychological well-being scales at the first and second waves. In comparison to the middle-aged cohort, younger women showed a stronger relationship between body esteem and positive relationships with others ($z = 2.00, p < .05$) and between body esteem and self-acceptance ($z = 2.29, p < .05$). Such findings indicate that body esteem is important in the construction of relationships and personal well-being for young women, but its impact may decrease with age. The longitudinal nature of this study is paramount in objectification literature, because most research before this point uses a cross-sectional approach to compare such measures in women of different age groups. The findings of McKinley (2006) also support the need for studying objectification in young women.

Environmental Effects

External factors in an environment may yield direct effects on bodily experience, further influencing physical and psychological outcomes. An experimental study by

Gervais, Vescio, and Allen (2011) examined the effect of the *objectifying gaze* on undergraduate men ($n = 83$) and women's ($n = 67$) math performance. Gervais et al. (2011) used Fredrickson and Roberts' (1997) tenants of the *objectifying gaze* and trained 4 confederates (2 men and 2 women) to accurately enact the *objectifying gaze*. Participants assigned to the experimental condition were taken into a room with a trained confederate of the opposite sex for a short interview and math quiz. The confederate looked at the subject from head to waist upon entrance followed by wandering eyes in the objectifying condition and maintained eye contact in the control condition. After the interview and math quiz, participants completed a survey to assess their desire to work with the confederate in the future. This was followed by completion of the body surveillance and body shame questionnaires from McKinley's (1996) OBCS, and the Figure Rating Scale (Stunkard, Sorenson, & Schulsinger, 1983) to determine body dissatisfaction.

Gervais et al. (2011) found that men and women responded to such environmental conditions differently. Women in the objectifying gaze condition performed significantly worse than women in the control condition on the math test while men in both conditions scored similarly. Among men and women in the objectifying gaze condition, women scored significantly lower than men on the math test, but men and women had similar performances in the control condition. Interaction motivation scores showed that women in the experimental condition were more likely than women in the control condition to want to work with their "partner," the confederate, again. Interaction motivation did not differ among men in both conditions. This study supports past research on sexually objectifying environmental conditions affecting flow and cognitive performance

(Fredrickson et al., 1998). The finding that women in the objectifying gaze condition were more likely to want to interact with their objectifying partner again despite negative outcomes shows that the experience of self-objectification itself may not be as unpleasant as its effects.

The *objectifying male gaze* is a clear example of an environmental effect on women's performance and psyche. External environmental factors lead to the construction of a *sexually objectifying environment* and affect levels of state self-objectification (Szymanski, Moffiyy, & Carr, 2011). Szymanski et al. 's (2011) core criteria for a sexually objectifying environment include places and situations with presence of traditional gender roles, high probability of male contact, positions of women in less power than men, focus drawn to physical or sexual attributes of the body, and present approval and acknowledgement of the male gaze. Additional factors include presence of alcohol, encouragement of sexualization through flirtation and related behaviors, and promotion of competition between women.

Such an environment is clearly illustrated at colleges through events like fraternity parties and mixers. However, college females are likely to come across many of these situations on a daily basis in their dormitories, classrooms, dining halls, and more. The college campus is laden with potential to be sexually objectifying for women via interpersonal relationships, social situations, romance, competition with peers, academic achievement, prejudice, and various external conditions (Schrack et al., 2012). Also, as stated earlier, college-aged women are at a greater risk to experience self-objectification and its outcomes than older women (McKinley, 1996).

Spencer et al. (2012) tested the impact of physical presence or absence of men in college on body image variables in females by surveying 175 undergraduate females at a women's college and mixed-sex college in the same city located in Midwestern U.S. It was hypothesized that social comparison would cause women at the single-sex college to endorse a thinner ideal and exhibit poorer body image measures than women at the mixed-sex college. However, the study found that women at the single-sex college endorsed larger body ideals. First-year students in both schools had similar body ideals, but upperclassmen revealed a major discrepancy in body ideals, suggesting that the presence or absence of men may be a contributing factor to personal body ideals in women.

While body ideals grew apart in the two groups, subjects from both schools scored similarly on self-objectification and physical appearance social comparison. Thus, self-objectification may be ever-present in females, but the *objectifying male gaze* and more frequent interaction with men may have a greater effect on internalization of ideals in women. Given the previous mentioned connections between body image with eating and exercise behavior in young women, this finding of Spencer et al. (2012) shows the importance of environment in understanding possible influences of health behavior in this given population.

While all of the criteria of a *sexually objectifying environment* presented by Szymanski et al. (2011) are potentially present on a college campus, perhaps certain situations where women's bodies are "on display" and in the presence of men may construct greater vulnerability for self-objectification. Such a situation may exist when women physically standing in front of men (i.e., giving a speech in class or walking past

a group of men), but women can put themselves "on display" through their clothing choices. According to Fredrickson and Roberts (1997), women sometimes choose to wear looser-fitting clothing to opt out of and tighter, more revealing clothing to enter the "objectification limelight."

The role of clothing in self-objectification and its correlated variables and outcomes was first examined with Fredrickson et al.'s (1998) swimsuit versus sweater study mentioned previously for its finding on the influence of self-objectification on flow and cognitive performance. Tiggemann and Andrew (2012a) studied the effect on clothing and setting in a 2 (clothing: bathing suit, sweater) by 2 (setting: public, dressing room) within-subjects experimental design of 102 undergraduate females. Overall, subjects in bathing suits reported higher levels of self-objectification, negative mood, body shame, and body dissatisfaction than those wearing sweaters. Among the women wearing bathing suits, subjects in the dressing room reported greater state self-objectification, and subjects in public scenarios reported greater negative mood. Thus, when women are dressed in a manner that puts them in the "objectification limelight" and are physically on display to others, there can be a negative impact on self-objectification and psychological well-being.

Tiggemann and Andrew (2012b) examined clothing and self-objectification in another sample of 112 female undergraduate students. Questionnaires contained a measure of clothing functions, BMI, self-classified weight, and self-objectification. BMI and self-classified weight were positively associated with the clothing function of camouflage. Self-objectification was positively correlated with clothing for fashion and

negatively correlated with clothing for comfort. This shows that clothing can be used as a tool for managing one's appearance and may reflect a woman's attitudes toward her body.

While clothing may be an indicator of a woman's own body image, it also serves as a vehicle for objectifying others. Gurung and Chrouser (2007) used an adapted version of the Self-Objectification Questionnaire to measure the objectification of others (e.g. Strelan and Hargreaves, 2005) in a sample of 82 undergraduate females exposed to images of famous female athletes dressed a) provocatively and b) in normal athletic gear. Despite the subjects' knowledge of the competence of the elite athletes' bodies, subjects scored them lower for "strength," "capable," "determined," "intelligent," "self-respecting," "feministic," "charitable," and "American" and higher for "attractive," "sexually experienced," "desirable," and "self-objectifying" when provocatively dressed. Tiggemann and Andrew (2012b) also found that subjects who reported higher levels of social physique anxiety exhibited greater objectification of others. Thus, clothing can affect how an individual feels, serve in appearance management, reflect body image, and influence an individual's judgments of others. Perhaps more relevant to self-objectification, clothing can exacerbate an already *sexually objectifying environment* (Szymanski et al., 2011).

Self-Objectification & Exercise

One environment in a college campus that combines fitted, revealing clothing with all of the other variables of Szymanski et al.'s (2011) *sexually objectifying environment* is the campus fitness center. People who exercise in a fitness center setting report higher levels of self-objectification than those who exercise outdoors (Strelan et al., 2003). In a college setting, female exercise participants are already at a greater risk

for body image concerns due to their age (McKinley, 1996). Fitness centers are social environments where the body is on display with the potential for various objectifying encounters and great emphasis on physical appearance. Thus, Fredrickson and Roberts' (1997) objectification theory has extended to exercise behavior research to gain a more holistic understanding of bodily experience and psychological determinants.

Greenleaf (2005) surveyed "physically active" women to determine self-objectification, body shame, flow (FTS, Jackson, Kimiecik, Ford, & Marsh, 1998), disordered eating attitudes (EAT-26), and exercise participation. The sample included 200 university students ($M = 20.96$, $SD = 2.42$) and 194 middle-aged women recruited from the campus recreation center and other local health facilities ($M = 48.95$, $SD = 6.40$). As shown in previous studies, BMI, self-objectification, and body shame were positively correlated with disordered eating, and younger women exhibited higher levels of self-objectification and body shame than the older women (Moradi & Huang, 2008; McKinley, 1996). Also, the younger women scored higher on the dieting subscale of EAT-26 and lower on the loss of self-consciousness. The key findings in this study were that disordered eating and self-objectification accounted for 9% ($p < .001$) of the variance in physical activity in younger women, and self-objectification accounted for 27% ($p < .001$) of the variance in physical activity in the older age group. Although this suggests self-objectification may be important to consider in the study of exercise behavior, the small amount of variance shows there are still other variables influencing physical activity.

Prichard and Tiggemann (2012) focused on exercise motivation to better understand the relationship between self-objectification and exercise behavior. This

longitudinal study measured exercise motivation with the Reasons for Exercise Inventory (REI, Silberstein, et al., 1988) and Self-Objectification (SOQ, Noll & Fredrickson, 1998) in 240 new female fitness center members ranging from ages 16 to 68 years ($M = 30.98$, $SD = 11.61$). In the REI, participants rate the importance of seven motivational domains for exercising: weight control, health, fitness, improving body tone, improving overall physical attractiveness, improving one's mood, and enjoyment. The seven motivational domains were collapsed into the three categories of appearance, health/fitness, and mood/enjoyment, following the methodology of Strelan et al. (2003).

A follow-up questionnaire was distributed 12 months later to determine changes in self-objectification and exercise maintenance. There were 133 follow-up surveys returned, and 86 of these participants were still members of the fitness facility while 47 participants no longer were. Subjects were divided into groups by age (16-28 years old and 29-68 years old) and fitness center membership status (Members at 12-months and No-longer members at 12 months).

Differences were found between these groups. The younger females who continued exercising at the fitness center for 12 months reported an increase of self-objectification at 12 months while the younger females who were no-longer members at 12 months reported a decrease in self-objectification from baseline measures ($p < .05$). Regardless of membership status, the older females reported a small decrease in self-objectification at 12 months, but results were not statistically significant for this group. Hierarchical multiple regression analyses was conducted to determine what variables subsequently predicted self-objectification at 12 months. Initial reasons for exercise was shown to be a predictor of self-objectification at 12 months, with a positive correlation

with appearance-related (Beta .24, $p < .01$) and negative correlation with enjoyment/mood improvement (Beta -.14, $p < .05$). This shows that young women, particularly those exercising for appearance-related reasons are at risk for experience greater self-objectification when exercising in a fitness center.

Exercising for appearance-related reasons has been linked to other negative psychological consequences. Strelan, Mehaffey, and Tiggemann (2003) recruited 104 women from a fitness center aged 16 to 25 years old. Subjects filled out questionnaires on Self-Objectification (SOQ), Reasons for Exercise (REI), Body Satisfaction (Body Cathexis Scale, BCS, McCaulay, Mintz, & Glenn, 1988), Body Esteem (BESAA: Mendelson, Mendelson, & White, 2001) and Self-esteem. Most participants (80%) had been attending the fitness center for 6 months or more, and 95% participated in at least two one-hour long fitness activities per week. The most common activity was use of cardiovascular machines (73.1%). The mean self-objectification value ($M = 3.75$) was higher than other samples of similarly aged females ($M = 0.82$; Fredrickson et al., 1998). This suggests that women attending fitness centers self-objectify more than general samples.

As predicted, Strelan et al. (2003) found self-objectification to have a negative correlation with body satisfaction, body esteem, and self-esteem. Appearance was the most popular reason for exercise and was moderately negatively related to body satisfaction, $r = -.57$, body esteem, $r = -.78$, and self-esteem, $r = -.55$ ($p < .01$ for all correlations). Exercising for health/fitness reasons and mood/enjoyment was found to have significant ($p < .01$) positive correlations with these body image measures. Reasons for exercise was also associated with self-objectification: appearance $r = .78$,

health/fitness $r = -.73$, and enjoyment/mood $r = -.56$ ($p < .01$). Further, Strelan et al. (2003) found reasons for exercise to mediate the relationship of self-objectification with body satisfaction and self-esteem. This study shows that an individual's motivation for exercise may impact exercise participants' bodily experiences and result in psychological correlates at polar ends of the body image continuum. Outcomes related to exercising for appearance-related reasons are significant since it has been found to be the most popular reason for exercise in this group (Strelan et al., 2003).

Vinkers et al. (2012) proposed appearance-motivated exercise as a mediator in the relationship of body esteem and eating disorder symptomatology. Female fitness club members ($N = 81$) ranging in ages from 17-50 years old ($M = 32.88$, $SD = 9.86$) reported exercise frequency and duration, reasons for exercise (REI), body esteem (BESAA), eating disorder symptomatology (Eating Disorder Diagnostic Scale, EDDS; Stice, Telch, & Rizvi, 2000). Reported exercise frequency and duration yielded a mean of 189.44 minutes (3.16 hours) per week, which is comparable to women from the general population (4 hours per week; Tiggemann & Williamson, 2000).

Vinkers et al. (2012) excluded the mood/enjoyment subscale of REI and focused on the measures from the two subscales of appearance and health to determine their role in disordered eating symptomatology. Body esteem was negatively correlated with appearance motives ($R = -0.32$, $p < 0.01$), and eating disorder symptomatology was positively correlated with appearance motives ($R = 0.48$, $p < 0.01$). The indirect effect of appearance motives on the relationship between body esteem and eating disorder symptomatology was examined by testing a mediator model with bias-corrected bootstrapping. The analysis showed that body esteem predicted eating disorder

symptomatology (Beta = -0.59, $p < 0.01$) and appearance-motivated exercise (Beta = -0.32, $p < 0.01$), while appearance motives were significantly associated with eating disorder symptomatology (Beta = 0.32, $p < 0.01$).

Appearance-motivated exercise was significant when examining the indirect effect of body esteem on eating symptomatology (Beta = -0.10, $p < 0.05$), and body esteem maintained a significant direct effect on eating symptomatology when including appearance motives as a mediator (Beta = -0.48, $p < 0.01$). Analysis was run to see if exercise frequency and duration also had a mediating role in the relationship between body esteem and eating symptomatology, but the result was not significant. This indicates that appearance-motivated exercise is a partial mediator between body esteem and eating symptomatology, and motives for exercise may impact psychology and health behaviors more than the amount an individual exercises. This finding further supports the complexity of bodily experience and outcomes via exercise in women.

A possible explanation for appearance-motivated exercise's negative outcomes on women's psyche could be that individuals' media-driven appearance goals are unrealistic. Even magazines with a focus on fitness rather than fashion use young, thin models (Wasylikiw et al., 2009), suggesting exercise can and should create such a facade. Homan et al. (2012) looked at the effect of exposing 138 female undergraduate students to athletic models of varying weights on body dissatisfaction. Subjects were randomly selected to one of three slideshows of photographs to view: thin and athletic (TA) models, normal weight and athletic (NWA) models, or the control condition of neutral objects. The authors carefully selected the photographs to represent the TA and NWA through a manipulation check, using 10 individuals unaffiliated with the study to rate the

photographs on the degree to which the models were "thin" and "athletic." The raters did not report a significant difference in athleticism, but a significant difference was reported in thinness between the two groups of photographs. This confirmed that models used in both the TA and NWA groups were perceived as exhibiting athletic competence but could be perceived as having different levels of attainment of the "thin ideal."

Homan et al. (2012) separated subjects by their assigned conditions into three classrooms. Two subscales of the Sociocultural Attitudes Toward Appearance Questionnaire-3 (SATAQ-3; Thompson et al., 2004) were used to determine the extent to which the subjects endorse and strive to attain cultural standards of attractiveness (internalized-general: IG) and the extent to which the subjects endorse a toned, athletic appearance (internalized-athletic: IA). This was followed by a neutral writing task to distract subjects. Then, Homan et al. (2012) exposed the subjects to a slideshow of their given condition's photographs. Immediately afterward, subjects were asked to fill out the Visual Analog Scale (Heinberg & Thompson, 1995) to assess subsequent body dissatisfaction.

Multiple regression analysis was used to assess self-reported levels of internalization (IG vs. IA) and the experimental condition in the prediction of body dissatisfaction. Results showed that BMI accounted for significant variance in body dissatisfaction, and the TA but not NWA condition yielded a significant effect on body dissatisfaction. IG but not IA predicted body dissatisfaction. However, IG did not act as a moderator. These findings suggest that whether females internalize thin or athletic appearance ideals, they may exhibit more negative attitudes toward their body after viewing a model that embodies both athleticism and the "thin ideal," a nearly unattainable

physique. The fitness center is a public arena of bodies of varying appearances on display. Therefore, media may blur the thin and fit ideal in photographs, but fitness center members may be exposed to similar body types in-person, further signifying the importance of examining such an environment in self-objectification literature.

Within the fitness center setting, Prichard and Tiggemann (2005) studied self-objectification (SOQ and OBCS Surveillance), reasons for exercise (REI), clothing preferences, body dissatisfaction (Body Cathexis Scale: BCS, McCaulay, Mintz, & Glenn, 1988) and disordered eating (Eating Disorder Inventory: EDI, Garner, Olmstead, & Polivy, 1983) in group fitness class instructors (N = 60) and participants (N = 97). Among class participants, exercise setting (fitness center vs. outdoors) was shown to moderate the relationship between exercise frequency and self-objectification. Overall, participants wearing tighter clothing reported greater levels of self-objectification. Stronger positive correlations were exhibited in aerobic participants than instructors in the relationships between body dissatisfaction and self-objectification, self-objectification and disordered eating, and self-objectification and appearance-related reasons for exercise. Aerobic instructors reported more mood/enjoyment reasons for exercise and lower levels of self-objectification, body dissatisfaction and disordered eating than participants.

Although instructors may have a healthier body image, their self-presentation may affect their participants. Martin Ginis, Prapavessis, and Haase (2008) investigated the effect of exercising with a video using a lean, toned aerobics instructor dressed a) in a fitted lycra tank top and fitted shorts ("physique-salient," PS condition) or b) in a baggy, long-sleeved top and shapeless trousers which covered the entire leg ("physique non-

salient," PNS condition). Subjects included 80 women (M age - 26.4 years, SD = 7.4) that had engaged in at least 2 bouts of moderate or vigorous physical activity per week for the past 6 months. In order to assess body attitudes before and after the experiment, subjects participated in 2 sessions. Session 1 included baseline surveys to assess trait Social Physique Anxiety (SPAS; Hart, Leary, & Rejeski, 1989), Body Areas Satisfaction (BASS) and Appearance Evaluation (AE) from the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000), and self-presentational efficacy (SPE; Gammage et al., 2004) to assess confidence in their abilities to present themselves to others as fit, competent exercisers.

One week later, participants returned for Session 2, where the experimental manipulation occurred. Participants exercised alone in a lab for 30 minutes to a video with either the PS or PNS condition and then were asked to fill out questionnaires to reflect state SPAS, AE, BASS, SPE, and exercise motivation. Participants also filled out items to reflect their perceived discrepancy of appearance compared with the instructor. Heart rate and perceived exertion measures were taken into account to check that participants in both conditions worked at similar intensities.

The most significant finding of this study was the main effect for perceived discrepancy as a significant predictor of measures for SPAS, AE, and BASS in Session 2. Participants who perceived their bodies as less attractive than the instructor reported poorer attitudes toward their bodies via the SPAS, AE, and BASS. This effect was found regardless of experimental condition, which indicates that an exercise participant may rate herself as being less attractive than an instructor regardless of clothing style and this may further affect her body image after exercising. Also, exercise motivation was

unchanged by the video condition, indicating that more than one exposure to such conditions may be necessary or exercise motivation is constructed by variables unrelated to or in addition to fitness instructors. The impact of perceived discrepancy on psychological outcomes from exercising with a video may generate the hypothesis that an interactive class in a fitness center setting with an individual's "body on display" may stimulate even greater effects on body image disturbance.

Prichard and Tiggemann (2008) recruited 571 female fitness class participants (M age = 35.99, SD = 11.93) to assess exercise participation (mode), reasons for exercise (REI), self-objectification (SOQ), body esteem (BESAA), and disordered eating behavior (EDI). Despite being within a healthy range for BMI on average, many participants were dissatisfied with their current weight, wishing to lose 5.69 kg. Cardio-based classes were most popular (M = 2.53), followed by weight-based (M = .62) and then yoga (M = .43). Health/Fitness related reasons for exercise were most popular (M = 5.90), followed by appearance-related reasons (M = 4.77) and then mood/enjoyment (M = 4.47). Time spent exercising in the fitness center showed a significant positive correlation to self-objectification and disordered eating behavior and significant negative correlation to body esteem in contrast to time spent exercising outside of the fitness center. Exercising in the fitness facility also had a greater association with appearance-related and mood/enjoyment reasons for exercise.

Prichard and Tiggemann (2008) found significant relationships between exercise mode and reasons for exercise with evaluated body image measures. Time spent doing cardio-based exercise was positively associated with self-objectification. Contrarily, time spent participating in yoga-based fitness classes was negatively associated with self-

objectification. Appearance-related reasons for exercise were positively associated with cardio-based exercise and negatively associated with yoga. Health/fitness reasons for exercise were positively associated with weights-based and yoga. Mood/enjoyment reasons were associated with cardio classes (but not cardio individual exercise) and time spent outside the fitness center in group activities. Age was negatively associated with appearance-related reasons and positively associated with health reasons. BMI was positively associated with appearance-related reasons.

This study's findings allowed Prichard and Tiggemann (2008) to run analyses to establish the role of reasons for exercise as a mediator for exercise mode and body image outcomes. Appearance-related reasons were found to mediate the relationship between cardio-based exercise and body esteem and disordered eating. This study shows the importance of exercise motivation and mode in shaping exercise participants' attitudes toward their bodies and disordered eating behavior. Specifically, Prichard and Tiggemann (2008) introduce yoga as a potential vehicle for improving body image in exercise participants. However, the cross-sectional nature of this study prohibits any conclusions of causation. Prichard and Tiggemann (2008) are unable to determine whether participants with health/fitness-related exercise motives and lower self-objectification are drawn to trying yoga or cultivate these characteristics through participation in yoga-based classes.

Introduction to Yoga

Before further examining yoga and its integration into the reviewed literature, it is important to acknowledge its history, foundational elements, and other related findings. Yoga is rooted in Ancient Indian history, integrating various spiritual and philosophical

elements from Hinduism, Buddhism, Jainism, and the sacred texts of *The Vedas*, *The Upanishads*, *The Bhagavad Gita*, and *The Yoga Sutras of Patanjali*. The Rig Veda is the first text to identify the meaning of yoga as "to yoke" or "to make one." "The intended yoking is that of one's mind and the divine, a self-transcendent quality creating a pure state of consciousness in which the awareness of 'I' disappears into a sense of divine essence" (Stephens, 2010, p. 2).

The Yoga Sutras of Patanjali carves out raja yoga's eight-limbed path toward "samadhi," a blissful state reached upon release of the ego. Many yoga practitioners integrate these limbs to create a more holistic lifestyle and liberation from daily suffering fabricated from the mind. The limbs include ethical abstentions, observances of self, discipline of the body, breath control, withdrawal of senses from external objects, concentration, steadfast meditation, and oneness. Yoga in the West tends to focus on two limbs of *asana*: the physical postures that foster discipline of the body, and *pranayama*, breath control (Iyengar, 1979). These two limbs are foundational elements of Hatha yoga (Stephens, 2010).

Hatha is derived from "ha," sun, and "tha," moon. The focus of this approach is a balance of life force and consciousness, intended to join mind, body, and spirit for a fuller experience of life. The most popular forms of Hatha yoga in the West are Vinyasa Flow, Iyengar, Anusara, Ashtanga, Kundalini, Power yoga, Bikram, and other variations. These styles serve as different vehicles to bring yoga practitioners toward "union" of mind, body, and spirit (Stephens, 2010). Thus, yoga is classified as a "mind-body" exercise and has been found to have many physiological and psychological benefits (Cowen & Adams, 2004).

Physiological changes from yoga include decreases in blood pressure, heart rate, and body weight (Murgesan et al., 2000). It has also been used to manage musculoskeletal disorders including osteoarthritis (Garfinkel et al., 1994) and low back pain (Galantino et al., 2004). Yoga's breathing exercises have been shown to improve functional exercise capacity in subjects with chronic obstructive pulmonary disease (Holland et al., 2012). Yoga can help improve quality of life in patients with breast cancer (Levine & Balk, 2012). It has also been used as complementary therapy and treatment for depressive and anxiety disorders (Saeed, Antonacci, & Bloch, 2010). Depending on the rigor of yoga style practiced, yoga may also help improve upper body and trunk dynamic muscular strength and endurance, flexibility, and health perception (Cowen & Adams, 2005).

Mindful exercise and yoga have been used in the treatment and prevention of eating disorders. Carei et al. (2010) conducted a randomized controlled clinical trial to test the effects of yoga on eating disorder symptomatology with the Eating Disorder Examination (EDE; Cooper & Fairburn, 1987) in subjects who were receiving outpatient care for Anorexia Nervosa, Bulimia Nervosa, or Eating Disorder Not Otherwise Specified. The subjects included 50 girls and 4 boys, aged 11-21 years old (M age = 16.52). Subjects were randomly assigned to an 8-week yoga intervention (1 hour of yoga semiweekly) or the control condition (wait-list). Assessments were conducted at baseline, post-intervention (week 9), and 1-month follow-up (week 12). Food preoccupation was measured before and after each yoga session, and significant decreases were reported after all sessions ($p < .01$). The yoga group had a significant decline in EDE scores through the 1-month follow-up while the control group increased in EDE scores after 9

months. The findings from Carei et al. (2010) suggest that yoga may help decrease disordered eating symptoms, but it does not include many measures to help explain how yoga has such an effect. Also, small sample size and lack of long-term follow-up were limitations to this study.

McIver, O'Halloran, and McGartland (2009) recruited 90 women between the ages of 25-63 years of age with diagnosed binge eating disorder (BED) and a BMI > 25 (overweight and obese) for a 12-week yoga intervention. Subjects were randomly assigned to participate in yoga (n = 45) or the waitlist control group (n = 45). However, only 25 subjects in each group were included in the analysis due to attrition and other conflicts. Changes in binge eating (BES; Gnomally et al., 1982) and physical activity (IPAQ; Craig et al., 2003) were assessed at baseline, post-intervention, and 3-month follow-up. At post-test assessment, a significant decrease ($p < .001$) in binge eating was reported in the yoga group while the control group remained relatively unchanged. The calculated effect size was 2.2. ($p < .001$). Physical activity levels also increased due to the yoga participants incorporating and maintaining an at-home yoga practice with the provided DVD in addition to the weekly class (effect size = 0.8, $p = .001$). Other significant changes at post-intervention assessment included decreased BMI, weight, and hip circumference. While improvements were maintained at the 3-month follow-up assessment, results were not statistically significant. This study shows that participation in yoga can improve an individual's physical and psychological well-being and lead to positive health behavior changes.

Yoga and Self-Objectification

Such findings of yoga's physical and psychological benefits, including decreased disordered eating, have led to the integration of yoga in objectification to literature. Dittman and Freedman (2009) surveyed 157 female yoga practitioners (attending yoga class or practicing at home at least once per week) to evaluate body image and eating. Subjects ranged in age from 22 to 72 years old (M age = 47.4, SD = 11.19). Body awareness (BA), noticing and attending to bodily sensations, was assessed using the observe subscale from the validated Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). In addition, body responsiveness (BR) was measured to differentiate the significance of sensing compared to responding. An unvalidated scale by Daubenmier (2005) was used to assess body responsiveness. The validated Intuitive Eating Scale (IES; Tylka, 2006) was used to measure interoceptive awareness and disordered eating behavior. Dittman and Freedman separated the subjects into two groups of yoga practitioners based upon reasons for practice: primarily psychospiritual reasons (n = 99) or primarily physical/appearance (n = 30).

A between-group comparison showed a significant difference in body satisfaction for the psychospiritual group compared to the physical group ($t(37) = 2.07$, $p < .05$). When both groups were combined, a positive correlation was found between body awareness and responsiveness. Body satisfaction and intuitive eating were positively correlated with BA and BR. BMI had a negative correlation with body responsiveness. All of these correlations were significant ($p = .01$). The findings from this study suggest that people practicing yoga for non-appearance reasons have a healthier body image than those practicing for physical/appearance reasons. Also, body awareness and responsiveness may be indicators of both a healthy body image and eating habits.

Impett, Daubenmier, and Hirschman (2006) examined changes in measures of body awareness and responsiveness in 19 participants (17 women and 2 men, Mean age = 34.4, SD = 8.6) enrolled in a 2-month yoga program. This observational study assessed participants in a yoga-immersion, which included 6 weekend sessions. At each of the 6 weekend sessions, participants filled out questionnaires including frequency of yoga practice, well-being (PANAS; Watson, Tellegan, & Clark, 1988), satisfaction with life (SWLS; Diener et al., 1985), Ryff's (1989) self-acceptance subscale, body awareness (BAQ; Shields, Mallory, & Simon, 1989), Daubenmier's (2005) body responsiveness scale, and the surveillance subscale of OBCS (McKinley & Hyde, 1996).

Participants had already been practicing yoga for an average of 5 years and 6 months (SD = 36.7 months) and reported practicing yoga an average of 4.4 hours per week (SD = 1.8) during the study. Baseline and post-immersion measures reflected a significant change in only self-objectification ($p < .05$). However, positive correlations were found within-person for body responsiveness and positive affect ($p < .01$) and for body responsiveness and self-acceptance ($p < .05$). A negative correlation was found between body responsiveness and negative affect. Although this study was limited by its small sample size and subjects' variety in yoga practice history and frequency, the findings show the significance of body responsiveness with other measures of well-being and yoga's effect on self-objectification.

Daubenmier (2005) examined the relationships between yoga, self-objectification, body satisfaction, and body awareness and responsiveness. For this cross-sectional study, women were recruited from exercise studios and shopping centers to form 3 groups: yoga ($n = 43$), aerobic exercisers ($n = 45$), and control comparison group of subjects

participating in neither yoga nor aerobics ($n = 51$). Self-objectification was assessed with the SOQ (Noll & Fredrickson, 1998), body satisfaction was measured with BAS (Brown, Cash, & Mikulka, 1990), disordered eating was measured with EAT-26 (Garner et al., 1982), body awareness was measured using the BAQ (Shields et al., 1989), and body responsiveness was measured with the previously mentioned scale created by Daubenmier (2005) for this study.

Yoga practitioners reported more favorable measures in all variables. In comparison to both the aerobics and comparison group, yoga participants exhibited significantly higher measures for body awareness, body responsiveness, and body satisfaction, as well as lower self-objectification. No significant differences were found between the aerobic and comparison group. The yoga participants reported less disordered eating than the aerobics group, but the results were not significant compared to the comparison group. Regression analyses were unable to establish body awareness as a mediator, but body responsiveness was found to mediate the relationship between self-objectification and disordered eating attitudes. This suggests that the distinction between awareness and responsiveness may be important. An individual may be aware of bodily sensations, but she may not take the necessary action to respond to them. Yoga's positive correlation with body responsiveness suggests that it may have potential for the use of prevention and treatment of eating disorders.

Daubenmier (2005) repeated this study in a sample of 133 female undergraduate students (Mean age = 20.46, $SD = 3.96$) due to their higher risk of body image disturbance in comparison to older women (McKinley, 1996). Reported outcomes exhibited similar correlations as the previous sample of women. Self-objectification was

negatively correlated with body responsiveness and awareness but only marginally in awareness. As also supported by Impett et al. (2006), disordered eating attitudes showed a significant relationship to body responsiveness but not awareness. Daubenmier (2005) calls for the inclusion of body responsiveness in literature examining the relationship between yoga, self-objectification, and other body image disturbances.

Summary

Within the literature exploring the relationships between self-objectification, reasons for exercise, fitness class type, body awareness, and body responsiveness, there exists several limitations. Key limitations include lack of longitudinal studies and inconsistent methodological designs. Within the yoga literature specifically, there is not only inconsistency in methods of outcome measures but also in the quantifying of yoga itself due to a vast array of styles.

Daubenmier's (2005) study is most influential in the incorporation of yoga into proceeding self-objectification literature. The findings of Prichard and Tiggemann (2008) support Daubenmier's (2005) claims of yoga's relationship to healthier body image in comparison to other exercise modes and add the importance of reasons for exercise. However, like the majority of self-objectification research, this study was cross-sectional and did not incorporate the variables of body awareness and body responsiveness, which are shown to be significant in the study of yoga.

As previously mentioned, the word "yoga" is derived from the phrase "to yoke" or unite. The practice of yoga involves integration of mind, body and spirit, and this principal should guide its study. Future research must bridge the findings of Prichard & Tiggemann (2008) and Daubenmier (2005) to fill methodological gaps and establish

causal relationships of variables over time. Such research findings would garner practical implications for the promotion of physical activity in young women in order to foster optimal results in both physical and psychological well-being.

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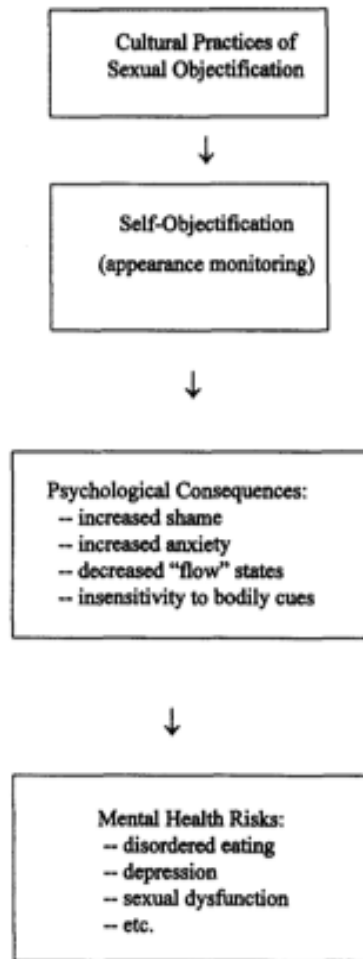


Figure 3: Fredrickson & Roberts (1997) original model for Objectification Theory

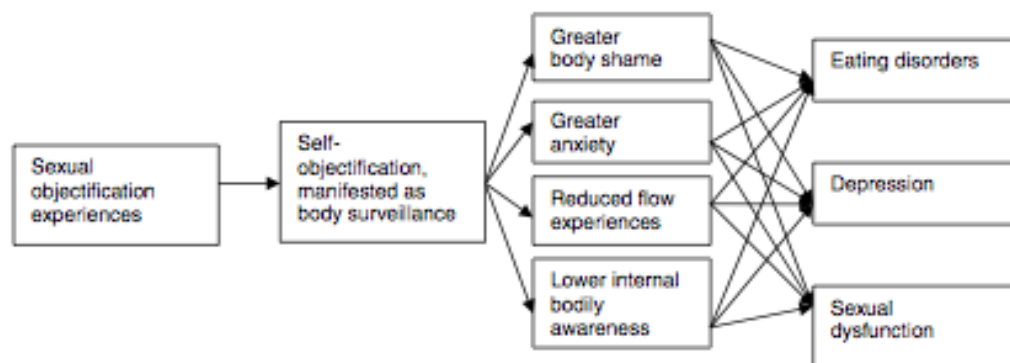


Figure 4: Moradi & Huang (2008) revised model for Objectification Theory

APPENDIX B

Baseline Demographic Survey

Background Information

1. Age: _____

2. Sex

- a) Male
- b) Female

3. Race

- a) American Indian or Alaska Native
- b) Asian
- c) Black or African American
- d) Native Hawaiian or Other Pacific Islander
- e) White, Non-Hispanic
- f) Hispanic
- g) Other _____

4. Height: _____ feet _____ inches

6. Weight: _____ pounds

Exercise History

Please answer the following questions. Note: "Regularly" refers to one time per week or more.

1. How many months or years have you *regularly* exercised?

2. How many months or years have you *regularly* participated in group exercise classes (excluding yoga)?

3. How many months or years have you *regularly* practiced Yoga?

4. How many times per week do you exercise in a fitness facility?

5. Circle the word that best describes your exercise level:

- a) beginning
- c) intermediate
- e) advanced
- b) beginning-intermediate
- d) intermediate-advanced

APPENDIX C

Reasons for Exercise Inventory (Silberstein et al., 1988)

People exercise for a variety of reasons. When people are asked why they exercise, their answers are sometimes based on the reasons they believe they should have for exercising. What we want to know are the reasons people actually have for exercising. Please respond to the items below as honestly as possible. To what extent is each of the following an important reason that you have for exercising? Use the scale below, ranging from 1 to 7, in giving your answers (if you never exercise, please skip this section).

	Not at all important		Moderately important			Extremely important	
1. To be slim	1	2	3	4	5	6	7
2. To improve my muscle tone	1	2	3	4	5	6	7
3. To cope with sadness, depression	1	2	3	4	5	6	7
4. To improve my cardiovascular fitness	1	2	3	4	5	6	7
5. To improve my appearance	1	2	3	4	5	6	7
6. To meet new people	1	2	3	4	5	6	7
7. To redistribute my weight	1	2	3	4	5	6	7
8. To lose weight	1	2	3	4	5	6	7
9. To improve my strength	1	2	3	4	5	6	7
10. To cope with stress, anxiety	1	2	3	4	5	6	7
11. To improve my overall health	1	2	3	4	5	6	7
12. To be attractive to potential partners	1	2	3	4	5	6	7
13. To socialize with friends	1	2	3	4	5	6	7
14. To improve my overall body shape	1	2	3	4	5	6	7
15. To maintain my current weight	1	2	3	4	5	6	7
16. To improve my endurance, stamina	1	2	3	4	5	6	7

17. To increase my energy level	1	2	3	4	5	6	7
18. To increase my resistance to illness and disease	1	2	3	4	5	6	7
19. To alter a specific area of my body	1	2	3	4	5	6	7
20. To improve my flexibility and coordination	1	2	3	4	5	6	7
21. To improve my mood	1	2	3	4	5	6	7
22. To maintain my physical well-being	1	2	3	4	5	6	7
23. To have fun	1	2	3	4	5	6	7

APPENDIX D

Self-Objectification Questionnaire (Noll & Fredrickson, 1998)

We are interested in how people think about their bodies. The questions below identify 10 different body attributes. We would like you to *rank order* these body attributes from that which has the *greatest impact* on your physical self-concept (rank this a "9"), to that which has the *least impact* on your physical self-concept (rank this a "0").

Note: It does not matter *how* you describe yourself in terms of each attribute. For example, fitness level can have a great impact on your physical self-concept regardless of whether you consider yourself to be physically fit, not physically fit, or any level in between.

Please first consider all attributes simultaneously. Then, record your rank ordering by writing the ranks in the rightmost column. **Every number will be used ONCE.**

IMPORTANT: DO NOT ASSIGN THE SAME RANK TO MORE THAN ONE ATTRIBUTE!

When considering your physical self-concept, what rank order do you assign...

<i>Greatest impact</i>	9	a) <i>Physical coordination?</i> _____
<i>Next greatest impact</i>	8	b) <i>Health?</i> _____
	7	c) <i>Weight?</i> _____
	6	d) <i>Strength?</i> _____
	5	e) <i>Sex Appeal?</i> _____
	4	f) <i>Physical Attractiveness?</i> _____
	3	g) <i>Energy level (e.g. stamina)?</i> _____
	2	h) <i>Firm/Sculpted muscles?</i> _____
<i>Next to least impact</i>	1	i) <i>Physical fitness level?</i> _____
<i>Least impact</i>	0	j) <i>Measurements (e.g. chest, waist)?</i> ... _____

Scores are obtained by separately summing the ranks for appearance-based items (3,5,6,8 and 10) and competence-based items (1,2,4,7 and 9), and then subtracting the sum of competence ranks from the sum of appearance ranks. Scores may range from -25 to 25, with higher scores indicating a greater emphasis on appearance, interpreted as higher trait self-objectification.

APPENDIX E

Body Awareness Questionnaire (Shields, Mallory, & Simon, 1998)

Listed below are a number of statements regarding your sensitivity to normal, nonemotive body processes. For each statement, select a number from 1 to 7 that best describes how the statement describes you and place the number on the line to the right of the statement.

	Not at all true of me						Very true of me	
	1	2	3	4	5	6	7	
1.	I notice differences in the way my body reacts to various foods.							_____
2.	I can always tell when I bump myself whether or not it will become a bruise.							_____
3.	I always know when I've exerted myself to the point where I'll be sore the next day.							_____
4.	I am always aware of changes in my energy level when I eat certain foods.							_____
5.	I know in advance when I'm getting the flu.							_____
6.	I know I'm running a fever without taking my temperature.							_____
7.	I can distinguish between tiredness because of hunger and tiredness because of lack of sleep.							_____
8.	I can accurately predict what time of day lack of sleep will catch up with me.							_____
9.	I am aware of a cycle/pattern in my activity level throughout the day.							_____
10.*	I <i>don't</i> notice seasonal rhythms and cycles in the way my body functions.							_____
11.	As soon as I wake up in the morning, I know how much energy I'll have during the day.							_____
12.	I can tell when I go to bed how well I will sleep that night.							_____
13.	I notice distinct body reactions when I am fatigued.							_____
14.	I notice specific body responses to changes in the weather.							_____
15.	I can predict how much sleep I will need at night in order to wake up refreshed.							_____
16.	When my exercise habits change, I can predict very accurately how that will affect my energy level.							_____
17.	There seems to be a "best" time for me to go to sleep at night.							_____
18.	I notice specific bodily reactions to being overhungry.							_____

* Indicates a reversed scored item.

APPENDIX F

Body Responsiveness Scale (Daubenmier, 2005)

Listed below are a number of statements regarding your response to bodily processes. For each statement, select a number from 1 to 7 that best describes how the statement describes you and place the number on the line to the right of the statement.

	Not at all true of me							Very true of me
	1	2	3	4	5	6	7	
1.	I am confident that my body will let me know what is good for me.							_____
2. *	My bodily desires lead me to do things that I end up regretting.							_____
3. *	My mind and my body often want to do different things.							_____
4. *	I suppress my bodily feelings and sensations.							_____
5.	I "listen" to my body to advise me about what to do.							_____
6.	It is important for me to know how my body is feeling throughout the day.							_____
7.	I enjoy becoming aware of how my body feels.							_____

* Indicates reverse score.

APPENDIX G

Body-Esteem Scale for Adolescents & Adults (Mendelson, White, & Mendelson, 1997)

Indicate how often you agree with the following statements ranging from "never" (0) to "always" (4). Circle the appropriate number beside each statement.

	Never	Seldom	Sometimes	Often	Always
1. I like what I look like in pictures.	0	1	2	3	4
2. Other people consider me good looking.	0	1	2	3	4
3. I'm proud of my body.	0	1	2	3	4
4. *I am preoccupied with trying to change my body weight.	0	1	2	3	4
5. I think my appearance would help me get a job.	0	1	2	3	4
6. I like what I see when I look in the mirror.	0	1	2	3	4
7. *There are lots of things I'd change about my looks if I could.	0	1	2	3	4
8. I am satisfied with my weight.	0	1	2	3	4
9. *I wish I looked better.	0	1	2	3	4
10. I really like what I weigh.	0	1	2	3	4
11. *I wish I looked like someone else.	0	1	2	3	4
12. People my own age like my looks.	0	1	2	3	4
13. *My looks upset me.	0	1	2	3	4
14. I'm as nice looking as most people.	0	1	2	3	4
15. I'm pretty happy about the way I look.	0	1	2	3	4
16. I feel I weigh the right amount for my height.	0	1	2	3	4
17. *I feel ashamed of how I look.	0	1	2	3	4

18. *Weighing myself depresses me.	0	1	2	3	4
19. *My weight makes me unhappy.	0	1	2	3	4
20. My looks help me get dates.	0	1	2	3	4
21. *I worry about the way I look.	0	1	2	3	4
22. I think I have a good body.	0	1	2	3	4
23. I'm looking as nice as I'd like to.	0	1	2	3	4

*Indicates reverse scored item

APPENDIX H

Six-Week Physical Activity Recall

6-Week Exercise Recall

Please answer the following questions according to your exercise participation

IN THE PAST SIX WEEKS:

1. Have you taken a non-yoga group exercise class at least once per week? Yes / No

If you circled yes, on average, how many classes per week did you take?

2. Have you taken Yoga class at least once per week? Yes / No

If you circled yes, on average, how many Yoga classes per week did you take?

3. Circle any of the following activities you participated in outside of group exercise classes during the past 6 weeks. Next to any choices you circle, write the number of times per week you participated on average:

a) **Cardiovascular Exercise Indoors** (i.e. Cardio Machine, Track, Swim, etc.)

_____ times per week

b) **Strength Training** _____ times per week

c) **Exercise Outdoors** (i.e. Run, Walk, Hike, Bike, etc.) _____ times per week

d) **Other:** _____ times per week

_____ times per week

4. After participating in class for 6 weeks, circle the level that best describes your exercise level for the class(es) you have been taking:

a) beginning

b) beginning-intermediate

c) intermediate

d) intermediate-advanced

e) advanced

5. Has participating in group exercise classes changed the way you feel about your body?

If so, which class in particular has affected you most? Please explain.

APPENDIX I

Informed Consent

The University of Rhode Island
Department of Kinesiology
25 West Independence Way
Kingston, RI 02881
Women and Exercise

CONSENT FORM FOR RESEARCH

You have been invited to take part in a research project described below. The researcher will explain the project to you in detail. You should feel free to ask questions. If you have more questions later, Bryan Blissmer the person mainly responsible for this study, (401) 874-5435, will discuss them with you. You must be at least 18 years old to be in this research project.

Description of the project:

This study will survey group exercise participants when they begin participating in classes and then six weeks later. The purpose of the study is to better understand female group exercise participants.

What will be done:

If you decide to take part in this study here is what will happen: You will sign this consent form and fill out the first set of surveys. Then, you will participate in at least one group exercise class per week. After six weeks of participating in the group exercise classes of your choice, you will fill out another set of surveys. The first set of surveys will take approximately ten minutes of your time, and the second set will take a few minutes less.

In order to hand in your surveys, you will place them each in the given envelope with your identification number. Place your envelope into the drop box at the Recreation Center's Registration Desk or the group exercise studio. Participation does not extend beyond handing in the consent form and first set of surveys, attending at least one group exercise class per week, and then handing in the second set of surveys six weeks later.

Risks or discomfort:

Participants in this study will not be harmed or put at any risk.

Benefits of this study:

After you hand in the second set of surveys, you will be able to schedule a 30-minute personal training consultation with a nationally certified personal trainer. You will also be entered into a raffle for one of five group exercise packages.

Confidentiality:

Your part in this study is confidential. None of the information will identify you by name. All data will be entered into an encrypted computer and records will be stored in a locked filing cabinet.

Decision to quit at any time:

The decision to take part in this study is up to you. You do not have to participate. If you decide to take part in the study, you may quit at any time. Whatever you decide will in no way penalize you. If you wish to quit, simply inform Bryan Blissmer, (401) 874-5435, of your decision.

Rights and Complaints:

If you are not satisfied with the way this study is performed, you may discuss your complaints with Bryan Blissmer or with Courtney Mackey, (973) 557-8383, anonymously, if you choose. In addition, if you have questions about your rights as a research participant, you may contact the office of the Vice President for Research, 70 Lower College Road, Suite 2, University of Rhode Island, Kingston, Rhode Island, telephone: (401) 874-4328.

You have read the Consent Form. Your questions have been answered. Your signature on this form means that you understand the information and you agree to participate in this study.

Signature of Participant

Signature of Researcher

Typed/printed Name

Typed/printed name

Date

Date

Please sign both consent forms, keeping one for yourself.

APPENDIX J

Recruitment E-mail

Dear Group Exercise Participant,

As a current member of the group exercise program, you have an opportunity to participate in a study through the Kinesiology Department at the University of Rhode Island. If you would like to find out more information, you can read the attached informed consent form. If you decide to take part in the study, you will need to print out and sign the informed consent form. The surveys are also attached for you to print and fill out. Bring in both the signed informed consent and filled out surveys when you come to your first group exercise class by September 15th to be included in the study. If you plan to participate in the study, you must attend at least one class per week for six weeks and then fill out one more set of surveys.

Upon filling out the second set of surveys, you will be rewarded a 30-minute personal training consultation. You will also be entered in a raffle to win one of five free group exercise packages.

If you have any questions, you may reply to this e-mail.

Thank you,
Courtney Mackey, Department of Kinesiology